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The Problem of Good Medical Care

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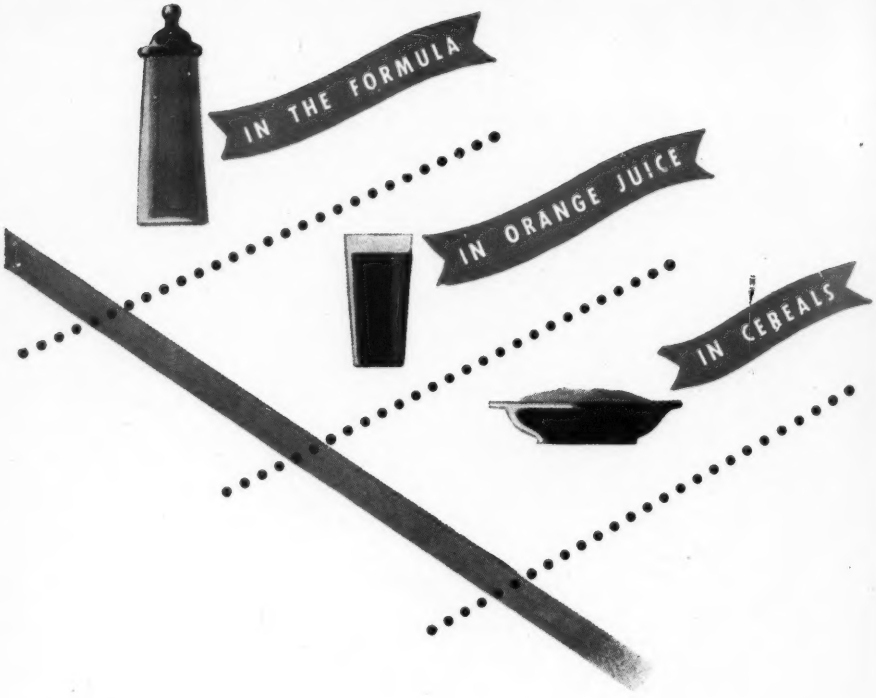

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Can We Solve the Problem, Good Medical Care?

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There was never a time that the general practitioner was in such a favorable position as he is at the present day. The medical schools, the laymen, the hospitals and all other groups are coming around to the conclusion that the medical profession was about to discard its greatest servant. The threat of socialized medicine has waked us up. For the next few minutes I want to discuss what we are doing about medical care in Louisiana.

The Medical Profession's Responsibility

Good medical care for all his patients is the first concern of the practicing physician. This is true whether he is a specialist or general practitioner. He must keep up with current medical progress, diagnostic aids and latest developments in drugs so that the patient will get the best possible medical care. This means constant reading, constant attendance on medical meetings, local, state and national; regular attendance in hospital staff meetings, medical conferences and participation in post-graduate training at regular intervals. It is not only important for the doctor to know how to treat the patient properly in the office or clinic but it is necessary for him to know how to give good hospital care when the patient is there. He must realize that the patient is away from home, usually in the hands of strangers, and he must be a little kinder and more sympathetic than he would at home. Many patients are not able to go to hospitals when they are sick and must be taken care of at home. Frequently, the doctor will not have the diagnostic aids that he has in the hospital, clinic or office. Then he must use his own natural ingenuity and experience in diagnosing the disease and in carrying out good medical care.

The medical profession must be intensely interested in preventive medicine. It is one thing to treat a patient after he is already sick and quite another to keep him well and prevent his getting ill. This makes for better, well rounded living.

The doctor should take an interest in his patient's diet, the recreation that he pursues, the amount and time of his vacation, his relaxation periods. He should follow his patient a little more closely in his general routine of living which in the long run means "good health." He must know what the contagious diseases are, which ones that his patients can be immunized against. This is particularly true of children but is no less important for the grown-ups. The patient who is going to take a prolonged vacation where he may drink water and milk that might be contaminated with typhoid should always be immunized against that disease. The doctor must be alert for the detection of tuberculosis, its treatment and its prevention. The doctor should take leadership in the community in which he lives in any sort of public health drive; in the better care of crippled children, or in whatever tends toward better health.

There are two more conditions that the medical profession should probably in general take a little more interest in, the mentally ill and the aged. Many times the family physician, if alert, can prevent a mental illness from developing into a full blown psychosis.

Since the average age of our population is increasing, we are having more of

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the aged than we ever had before. It is becoming more and more apparent that the family doctor should know more about the diseases that are peculiar to old age.

The doctor must in every way further medical education whenever possible. He should assist medical schools and teaching institutions to train suitable young men to become doctors. He should assist graduates in pursuing further education. He should not only attend post-graduate courses but if qualified assist in giving them. We need well-fitted men to keep on desiring to enter the specialty fields. Consultants are always necessary; we certainly could not have good, well rounded medical care without them. In years gone by, it was realized that one doctor took a particular interest in one type of disease, that he studied this more and became a little more proficient than his fellow practitioners in its treatment and care. He was frequently called upon for consultation. This finally developed into the greatest field of specialism that the world has ever seen. The large clinics over the country and our medical schools have been largely responsible for this extensive training of specialists. But the patient in many instances wants his family physician to treat him. A *good general practitioner* is a man who is well trained in all fields of medicine and knows and will use consultants whenever necessary. He is a man who will not lose sight of other parts of the body while trying to treat one.

It has been estimated that the well trained general practitioner can take care of eighty-five per cent of human ills. The cost to the patient will be much less if cared for by one man rather than by a group of men. It has been reliably stated that forty per cent of all American doctors are specialists in one line or another. Since this field is definitely overcrowded, we find many of the specially trained men doing general practice. These men have spent years in active study of their specialty; have trained to limit their practice to one field. But many find themselves in such strong competition with other men in their specialty that it is necessary to do general practice to make a living. The only other alternative is to over-charge the patient for services rendered. Both are detrimental to the patient and to the medical profession.

The Role of the Medical Schools and Hospitals

The organization of a medical school requires the expenditure of large sums of money, approximately ten million dollars, I am informed, to put it into operation. After the buildings are up, a large amount of equipment has to be assembled and a competent staff employed. The school must be available to a large general hospital and its facilities must be available for clinical teaching. These expenditures of money and personnel are worth while only if they give that community or state the type of medical care that they expect. The teaching staff, which is probably far more important than the buildings, the equipment, the library or all the other material things, should be well trained, logically minded and sympathetic. Certainly "specialists" are needed here! "Misfits" in medical teaching should not exist. Clinical teaching should be done by men practicing medicine and should include general practitioners in its personnel.

It has been estimated that, after the expenditure of ten million dollars for the plant, it costs four thousand dollars a year to put a student through medical school, a total of sixteen thousand dollars for the four years or forty thousand dollars for the over-all cost of producing one physician. If the community or state has expended such a large sum of money for the training of the doctor then the first duty of that doctor is to the taxpayers of the state that contributed such a large amount to his education. The investment of forty thousand dollars into the doctor's future should not be ignored either by the doctor himself or by the community that made the contribution. His first consideration should be that of where he can do the most good. Of course, under no circumstances can we belittle his own contribution. He has put in eight to twelve of the best years of his life, all the money that he and his

family can afford and frequently all that the banker will let him have. Both parties should realize the enormous investment and make sure that it is properly used. It is the duty of the medical schools to produce the number of well trained men that are needed in that state or locality. An attempt should be made to keep supplied both the number of general practitioners and the number of specialists that may be needed in the state that it serves, allowing for normal interchange from one state to another. Areas that can produce types of specialists that is impossible for others should carry on that special training. Research work that is so necessary for a greater medical program should always be done.

The hospitals of the State also have an enormous responsibility for good medical care. Their first responsibility is to supply the care their patients need. A second responsibility is that of assisting the doctors themselves and finally they should lend themselves insofar as possible to the training of interns, residents, nurses and technicians. The training of residents in general practice should be included in most institutions. Hospitals that are equipped should take on research or investigative work whenever and wherever necessary.

The Rural Health Council

The Rural Health Council of Louisiana is under joint sponsorship of the Louisiana State Medical Society and the Farm Bureau. But it is composed of all lay and professional groups that we can get in. They include one representative from each of the following organizations and agencies:

Louisiana Medical Society
Louisiana Medical Auxiliary
Louisiana Dental Society
Louisiana Department of Public Welfare
Louisiana Department of Education
Louisiana State Board of Health
Louisiana Parent-Teachers Association
Louisiana Federation of Women's Clubs
Louisiana Tuberculosis Association
Louisiana Cancer Society
Louisiana Society for Crippled Children
Louisiana Farm Home Administration
Louisiana Agricultural Extension Service
Blue Cross Association
Louisiana Physicians' Service
Louisiana Nurses Association
Louisiana Home Demonstration Council
Louisiana Hospital Association
Louisiana Press Association
Louisiana Department of Institutions
Louisiana Experiment Station
Associated Women of Louisiana Farm Bureau
Louisiana Social Welfare Conference
Louisiana Farm Bureau

Other state-wide organizations or agencies which have a direct interest in rural health may be elected to membership by a vote of a majority of the members of the council.

Members at large may be elected by a majority vote of the members of the council.

The purpose of the council is to discuss problems relating to the health of the rural people of Louisiana, to prepare such recommendations for the betterment of rural health as can be agreed upon by a majority of the members present at regular or special meetings, to advise and make recommendations to the Board of Directors of the Louisiana Farm Bureau with regard to their policies and programs for the betterment of rural health and to sponsor the organization of local health councils.

We hope to stimulate interest in health and public welfare to take on some overall planning and coordination in assisting small groups to solve their own problems. We think that in many cases the Rural Health Council can be instrumental in determining the number of physicians, dentists, nurses and technicians needed in different areas. The Rural Health Council hopes to help with hospital planning and in the determining of hospital needs. Educational programs can be carried out under its direction and it can be one of the best public relations organizations of the medical profession in the community itself.

In future planning to anticipate the needs of the community or of the state, the council would anticipate the income and dis-

bursements of moneys for public health needs. Finally, it is felt that the Rural Health Council should do the over-all planning.

The Role of the American Academy of General Practice in the State

The objects and purposes of the organization of the American Academy of General Practice in Louisiana is set out in the constitution as:

1. To promote and maintain high standards of the general practice of Medicine and Surgery in Louisiana.
2. To encourage and assist in providing post-graduate study for general practitioners in Medicine and Surgery and to encourage and assist practicing physicians and surgeons to participate in such training.
3. To encourage and assist young men and women to prepare, quality, and establish themselves in general practice.
4. To protect the right of the General Practitioner to engage in Medical and Surgical procedures for which he is qualified by training and experience.
5. To advance medical science and private and public health.
6. To maintain private patient-physician relationship. The Academy is not operated for profit.

Certainly in trying to maintain high standards in general practice in Louisiana, we are attempting to bring the general practitioner back to the level in medicine that he justly deserves. In encouraging post-graduate training which we insist on in our by-laws, that is, that the doctor must take 150 hours of post-graduate training every three years, we will naturally stimulate the best types of medicine.

Since the specialty fields are already over-crowded, we think that *young men who are willing to enter the general practice field* should be encouraged to enter medical schools. In keeping with this, it is suggested that medical schools become more interested in what the young premedical student expects to do after he gets his medical education. More attention should be given to the men who expect to go into general practice. It is the hope that in the future, medical schools will see fit to establish chairs of general practice similar to the one in the University of Louisville. We hope that less attention will be given to specialty training which now dominates all medical schools and more to that of the general practitioner. They should be the first to inaugurate residencies in their own general hospitals and then stimulate their creation in other, non-teaching, institutions. Certainly our organization expects to enforce the right of the general practitioner to engage in the medical and surgical procedures for which he is qualified in the hospitals of this country. Discrimination against the general practitioner should not be tolerated.

We certainly intend to look after private and public health and advance medical science in general, probably more than the specialties. Through the above objects and purposes we hope to maintain that private patient-physician relationship which has made American medicine the greatest system the world has ever seen.

If these objectives are carried out, then we should find this organization setting much higher standards in medical practice in hospitals, clinics, offices, homes and wherever American medicine serves.

If we regain esteem and respect for the "family doctor," then we will have accomplished a great deal. But in carrying on all this work, we must keep in mind that "the good we do" is more important than "what fee we get."

The Health Department and Health Centers

This is a large field that I intend to touch on only lightly. Every health department should be interested in the prevention of disease, keeping statistics on disease and vital statistics. Laboratory facilities should be provided wherever possible. Certain diagnostic clinics should be set up, particularly for indigents, and public health nursing should be included in their program.

We want our water, milk and food supply guarded and this takes vigilance, pa-

tience and cooperation. In no case should the health department be a practitioner of medicine but should be a guardian of the health of the community.

The Role of Prepayment Medical and Hospital Insurance

Prepayment medical and hospital insurance came as an answer to a definite need. Doctors did not want to go into the insurance business but since the private insurance companies had not done so, it became apparent that we had to. These organizations have grown up all over the country. The prepayment hospital insurance was born at Dallas, Texas (Baylor Hospital) and Shreveport was probably the second city to enter the field. The reason for this development was that the cost of medical and hospital care had become expensive. A prolonged illness was always burdensome and many times catastrophic to the family. A patient who was solvent in every respect when he got sick found himself, at the end of a long illness, bankrupt, in debt for hospital and doctors' bills and unable to carry on. Insurance was the answer. The burden could be prorated over the community of policy holders. Most people want to carry their load and none want to be paupers or on charity.

The Louisiana Physicians Service and the Louisiana Hospital Service is the answer to this. It is the American way of living. It is the American way of solving our own problems when they arise. Our people neither ask for nor accept paternalism from the government.

It is far less expensive compared with the cost of Veterans Administration care.

The Community's or Peoples' Responsibility

It has been said that the American people get what they want if they want it badly enough. In no case is this more true than it is in the case of good medical care. Through the assistance of our health councils, the community can build and equip good hospitals and health centers wherever they are needed and wherever it is expedient to do so. Use can be made of the Hill-Burton Bill if communities want to go into that sort of elaborate set-up or they can build the hospitals out of their own funds either through private donations or taxation. After the hospital is built, the community can assist in getting well trained doctors and other technical help to operate these hospitals but it must realize that if a rural community builds a hospital and equips it as its contribution to community health that the doctor whom it brings in must not be starved to death. He must be allowed to be prosperous comparably to his brother in the urban districts. His family must be permitted to enjoy some of the better things of life or he will move to the city.

After the community has settled on a good general practitioner to take care of its health needs with the facilities that are provided, then it must use him. To pass him by seeking out the specialist in the city will only drive him to the city.

The community can encourage this family physician to take special training and it can encourage him to call in consultants or specialists when they are needed.

The community should work with its local physician for better health in all respects but must not expect him to take the whole load. If people expect to have better health they must have more frequent examinations so that disease may be prevented, so that the doctor can tell them more about healthy living. Many night calls can be avoided if the doctor has done a thorough examination on his patient at his office in the recent past. Dr. Borsch, President of the American Medical Association, said, "If a patient will come to my office for a complete examination when he is well, then I will have a better idea what to do when he is sick and almost eliminate the night call nightmare." And the prospective patient must not forget his own responsibility for his health. If he is personally not interested enough to help the doctor keep him well, then he must not expect too much when he becomes ill from improper living.

The cost of medical care has definitely increased over the past half century, not

—Continued on page 193

Hemangiomas of the Skin and Their Treatment

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A hemangioma is a true neoplastic process involving vascular or lymphatic tissue. It is generally believed that simple hemangiomas are congenital in nature, have their origin in embryonic sequestrations of mesodermal tissue, and grow by projecting buds of endothelial tissue. This bud is at first a solid cord which becomes canalized and establishes communication with the parent vessel. Histologic studies[1] tend to confirm Ribbert's[2] original theory that a hemangioma (with the exception of the relatively rare racemose or cirsoid type) has no anastomotic connection with surrounding vessels and possesses only one afferent and one efferent vessel.

About three-quarters of the total number of hemangiomas are present at birth, and in more than 85 percent the lesions develop before the end of the first year. In most instances only a single tumor exists but multiple lesions occur in about 16 percent of the patients.

Hemangiomas comprise the most numerous single group of neoplasms occurring in childhood.[1] Females are more frequently affected than males in the ratio of 2 or 3 to 1. The incidence of the disease in Negroes is low in the United States—less than 10 percent of the cases being in that race. The anatomical distribution of these lesions is approximately as follows: head, 52 percent; neck, 4 percent; trunk, 23 percent; extremities, 19 percent; and genitalia, 2 percent. Three different types of hemangioma fall within the province of the dermatologist, namely, the port-wine stain, spider or spider-web hemangioma and capillary hemangioma. Each differs from the others structurally, and the method of treatment of each is different. Let us consider the types separately.

The port-wine stain. This is a diffuse telangiectasia of superficial vessels of the corium. On section, a very narow, superficial zone of scattered, dilated vessels lined with flattened adult endothelium is seen.[1] Clinically, the lesion presents a flat, irregularly-shaped, well-demarcated, reddish-purple area in the corium and blanches on pressure. It is generally present at birth, and in about 90 percent of cases is located on the face or neck. The lesion in the latter site is generally fainter in tint than those upon the face and is most frequently found just beneath the occipital protuberance; by some authors it is termed nevus simplex. Such nevi occur also, but less frequently, on the forehead between the eyebrows. Nevus simplex is the commonest form of hemangioma and it has been estimated that about one-third of all new born infants[3] present this lesion, which persists into adult life in a small proportion of persons, chiefly women. The true port-wine stain—as distinct from nevus simplex—which commonly occurs on the face, seldom regresses and, with the exception of the spider hemangioma, is the type of vascular nevus most frequently found in adults.

The spider hemangioma. This is characterized by a flat or slightly elevated central capillary, pinhead-sized or slightly larger, from which the blood vessels radiate like the spokes of a wheel. From one to several lesions occur as a rule, situated most frequently on the cheeks, beneath the eyes, and on the nose. While the spider nevus is occasionally found in infancy it most commonly appears later in life. In-

dividual lesions seldom increase in size and regression or disappearance is most infrequent.

The capillary hemangioma (strawberry mark). This is a new growth consisting of capillary blood vessels supported by delicate connective tissue strands; the former are lined with a single row of well-differentiated endothelial cells. As a rule the lesion is well-circumscribed, lobulated, slightly elevated, bright red in color and of a doughy consistency. Its situation in the skin is superficial and it ranges in size from a few millimeters to several centimeters in diameter; it may be as much as 1 or 2 centimeters in thickness. There is little exact information upon the fate of untreated capillary hemangiomas. I have not seen any disappear spontaneously but it is likely that some do as they are not seen in adults and it is difficult to believe that all either receive treatment or are obliterated by infection. I am of the opinion that all should be treated as they increase in size with the growth of the infant and, being readily traumatized, they are consequently easily infected. While infection often leads to complete closure of the blood vessels composing the tumor it is followed by conspicuous scarring—a process that can be avoided by the following methods of treatment.

General Principles of Treatment

Port-Wine Stain. There is no treatment for this lesion. It is best concealed by the application of a pasty cosmetic such as "Covermark." Such concealment is an easy matter as the lesion is neither elevated above nor depressed beneath the skin.

Spider hemangioma. This is destroyed by the action of the galvanic electric current. A fine needle attached to the negative pole of a circuit carrying such a current is inserted into the central capillary and a current of 1 milliampere is passed for from 30 to 60 seconds. The source of the current may be either a few cells connected into a battery or the commercial direct current pasing through a suitable resistance (rheostat.)

Capillary hemangioma. The best time to treat this lesion is during infancy—from the ages of 3 months to 2 years. Early treatment is necessary not only because it will prevent most lesions from getting larger and spreading laterally but also for the reason that the endothelial cells lining the vascular spaces of the tumor are more radio-sensitive during their early life.

Capillary hemangiomas which are encountered by the dermatologist are seldom more than 4 centimeters in their largest surface dimension and are generally less than 2 centimeters; the depth of the lesion is more difficult to measure as it is largely a matter of impression. The deepest lesions convey on palpation the feel of a varicocele and show much bluish discoloration of the skin at the periphery and beneath the red portion of the lesion.[4] The depth of a lesion is not necessarily related to its surface area.

There are two very useful methods of treatment of capillary hemangiomas, namely, radium by application and sclerosing solutions by injection. The former is the first choice and produces spectacular results with small doses in many lesions—particularly those which are bright red in color and thin or only moderately thick in depth. There are certain localities in which radium must not be used in the treatment of hemangiomas. These include[1] breasts and genitalia where marked atrophy may occur; long bones, particularly over the epiphyses where premature ossification may occur, leading to arrest of longitudinal growth; and areas adjacent to the eyes in which changes in the lens may arise from the action of the radium. Radiation lens changes usually occur within 2 to 5 years after treatment and are readily detected by the characteristic ophthalmoscopic appearance of a small central circumscribed flake-like opacity in the lens capsule.

Treatment of Capillary Hemangiomas By Application of Radium

Radium as such does not have any therapeutic value. The tissue reactions which follow radium treatment are the result of the absorption of energy by the tissue from the radiations emitted by radium and its disintegration products.[5]

Such absorption injures the tissues but recovery therefrom is possible if the degree of damage is small. It is therefore necessary to shield the normal surrounding tissues when treating a lesion with radium.

In the disintegration of radium, mass and energy are lost in one or more of three forms of radiation, called the alpha rays, beta rays and gamma rays. The alpha rays are nuclei of helium atoms which travel at a velocity which may be as high as one-tenth of the velocity of light. In spite of its large content of energy the alpha ray cannot travel far through solid materials; the greatest distance it can penetrate tissue is about 0.1 millimeter, and in the case of materials of greater density the distance is even less. As the walls of applicators containing radium for use in therapy are of considerably greater density than human tissue and are generally thicker than 0.1 millimeter, the quantity of alpha radiation reaching the skin from such an applicator cannot produce any therapeutic effect.

Beta rays are electrons. They have an individual mass which is about one eight-thousandth of that of the helium nucleus, a velocity which may be as high as 99 percent of the velocity of light and each electron has 1 unit of negative charge in contrast with the 2 units of positive electric charge possessed by the alpha ray. As a consequence of these differences in physical properties the beta ray possesses much greater power of penetration than the alpha ray and can travel through tissue for a distance of approximately 10 millimeters. Gamma rays are electromagnetic radiations similar to, but of shorter wave length than, most roentgen rays and, like all electromagnetic radiations, travel at the same velocity as light. While the energy of the gamma ray is, on the whole, only a little greater than that of the beta ray, its penetrating power is much higher than that of either the alpha or beta ray. Passage of the gamma rays through 10 millimeters of tissue only reduces their intensity by about 5 percent and some of these rays can be detected through 15 centimeters or more of lead.

In a preparation of radium in equilibrium with its products the amount of energy delivered in the form of beta rays is many times that delivered in the form of gamma rays. As it is only the gamma rays which can penetrate to the deeper tissues it follows that treatment of lesions which extend to a depth of more than a few millimeters necessitates the removal of most of the beta rays; otherwise, the absorption of the beta rays in the superficial tissues during the relatively long time required for the gamma rays to produce the desired effect in the deeper tissues would cause serious destructive changes in the superficial tissues. It is not radium itself but its descendants (which result from the spontaneous disintegration of the radium) which emit the beta and gamma rays. The first disintegration product of radium is radon which gives off an alpha particle, becoming transformed into radium A; this, in turn, gives off an alpha particle, becoming radium B. Radium B undergoes a beta ray change and forms radium C. Each of these named products of the disintegration of radium is a separate element and all are solid except radon, which is a gas. The type of radiation emitted by these elements differs among them; thus, radium, radon and radium A emit alpha radiation only whereas both radium B and radium C emit beta and gamma rays. If beta and gamma rays are required the source will have to consist of radium B and C which exist in a container of radium which has had time to come to equilibrium with its contents. This period is about 2 months and equilibrium can only be secured if the container is sealed to prevent escape of any of the products of disintegration—especially the gas radon —of the radium. The most popular type of apparatus used by dermatologists for the radium treatment of hemangiomas is known as a flat applicator. The content is a radium salt, usually the sulfate, and the strength is always specified in terms of the amount of radium element present, as certified by the United States Bureau of Standards, or some other responsible organization. The flat applicator is used almost exclusively in dermatology and is so constructed that a large proportion of

the beta rays can be utilized for superficial therapy. The applicator is commonly employed in one of two forms: the first, known as a glazed plaque, contains the radio-active material mixed with enamel and applied to a metal surface, usually silver; the second, the all-metal plaque, in which the radium with its silver backing is covered with a very thin layer (0.05-0.1 mm.) of monel metal. The chief drawback to the use of these flat applicators is that it is difficult to ensure perfect tightness of the enamel or monel metal cover. If there is a crack or leak, radon escapes and the plaque loses strength. The plaques commonly employed are square with an area of 2 or 4 square centimeters, and are obtainable in 2 strengths, namely, half-strength, containing 2.5 milligrams, and full strength, containing 5 milligrams of radium per square centimeter. For extremely superficial lesions it is well to use as much beta radiation as can by tolerated by the skin overlying the lesion. For those slightly thicker, but still superficial, the very softest (that is, the least penetrating) beta rays should be removed by a light filter while for anything more than 3 or 4 millimeters thick it is advisable to use a filter heavy enough to give almost entirely gamma radiation. The beta ray can be completely removed by filtration through 0.5 millimeters of platinum or gold, 1 millimeter of silver or lead and 2 millimeters of brass, monel metal or steel. In order, however, to make use of the therapeutic effect of the beta ray it is customary to filter the ray, where treatment is carried out with the all-metal plaque, through 0.05 or 0.1 millimeter of monel metal (provided by the cover of the plaque) together with 0.8 or 1.5 millimeter of aluminum, depending upon whether a half- or full-strength plaque is used. As the glazed plaque has no metal covering it is necessary to increase the thickness of the aluminum filter to 1 or 2 millimeters for half- or full-strength plaques, respectively. The amount of beta radiation passing through these combinations may be determined by the fact that 0.1 millimeter of monel metal transmits about 60 percent, and 0.1, 0.5, 1.0 and 2.0 millimeters of aluminum transmit 87, 52, 27 and 7 percent, respectively, of the beta rays.

When gamma rays of radium pass through metal filters, secondary beta rays are generated together with the characteristic radiation of the metal, and mix with the emergent (or therapeutic) beam. Such secondary rays are capable of producing sharp superficial reactions. They are, however, much less penetrating than the primary beam and can be largely removed by about 2 millimeters of rubber or other organic material of about the same density.

In the actual treatment of hemangiomas with flat applicators, the plaque, glazed or all-metal, with the requisite metal filter —commonly aluminum or brass—in immediate contact with the active surface, is tied up tightly with strong string or dental floss in a closely fitting bag made of rubber sheeting 2 millimeters thick. The applicator is fastened firmly with adhesive tape to the area of skin to be treated and maintained in position for 1 hour, and then removed. The identical treatment is repeated at four-weekly intervals until the lesion disappears. For most hemangiomas from 4 to 8 applications are required. At the conclusion of treatment the site of the lesion is of a whiter color than the surrounding normal skin, and sometimes a small blood vessel, too fine for treatment by electrolysis, can be seen. With the passage of time, the treated area gradually assumes the color of normal skin and the small residual blood vessels disappear. Too intense beta radiation of the treated area produces, in increasing order of severity, pigmentation, desquamation, erythema, edema, vesiculation and ulceration. These undesirable reactions appear about 10 days after radiation but, with the dose and filtration recommended in this presentation, are seldom of serious consequence. Normal skin must never be treated, and in those instances where the plaque is larger than the lesion, a hole of the same size and shape as the lesion is cut in a piece of lead, 1 millimeter thick, and the center of the plaque, with its filters and rubber covering, is placed over the center of this hole and fastened into position with

adhesive tape. In order to be certain that no movement of the lead shield occurs during the fastening of the applicator, it is best to secure the shield firmly with transparent adhesive material, such as Scotch tape, before strapping the applicator in position.

Treatment of Capillary Hemangiomas By Injection of Sclerosing Solutions

The principle underlying this form of treatment is that the injected material will produce a sterile inflammatory response in the lesion which results in the obliteration of the lumen of the blood vessels which constitute the tumor. Sclerosing solutions are employed for the treatment of hemangiomas occurring in the sites, outlined earlier in this paper, in which the use of radium is contra-indicated. Lesions more than 1 centimeter thick are best treated by the use of both radium and sclerosing solutions. In such instances the radium is employed first in the manner and dose already outlined and obliteration obtained of the vessels nearest to the surface. The deepest portions of the lesion will not, however, have received any beta rays and only an amount of gamma rays insufficient to close the vessels present there. Radium treatment is then discontinued and the deeper vessels are obliterated by the injection of the sclerosing solution. The solutions which have been employed for the purpose include:

1. *Quinine hydrochloride and ethyl carbamate* (urethane)[6] in a concentration of 13.33 percent and 6.66 percent, respectively. This has now been abandoned owing to the occasional production of severe anaphylactic reactions in the patients so treated.
2. *Sodium morrhuate* in a 5 percent solution. The use of this material has also been discontinued owing to the occasional production of severe anaphylactic reactions in the patients so treated.
3. *Monolate* (Abbott).[7] This is a solution containing 5 percent of monoethanolamine oleate and 2 percent of benzyl alcohol. Since this preparation does not contain a protein, allergic reactions, such as dermatitis or anaphylaxis, do not occur as frequently as they may with solutions of this type of sodium morrhuate.
4. *Varisol* (Abbott).[7] This is a solution containing 30 percent of invert sugar and 10 percent of sodium chloride; 1 percent of benzyl carbinol is added as a local anesthetic. This preparation appears to be free from the production of anaphylactic reactions.

Treatment should be commenced as early in infancy as is possible and convenient. Babies have been treated[7] at as early an age as 2 weeks but I prefer to wait until 3 months is reached—a time when the child is stronger and less liable to intercurrent infection from exposure in public vehicles.

The first injection may range from 0.05 to 0.5 cubic centimeters, depending upon the size of the lesion, and the total volume employed in the treatment depends upon the size of the lesion and the extent of the response to each dose. I employ a 24 gauge needle and a 2 cubic centimeter Luer-Lok syringe. When use is made of monolate, in which anaphylactic reactions may occasionally occur, the initial dose is smaller than necessary if there should be a strong allergic background in the family. Injections may be given at more than one site and as much as 10 cubic centimeters have been given in 10 different areas to the same lesion during a single treatment.[7] It is impossible to predict the number of treatments required in any particular case. The interval between treatments should be about 3 or 4 weeks in order to allow ample time for the edematous swelling produced by the injection to subside. Care must be taken to place the solution deeply enough to avoid necrosis of the skin from too superficial an injection. An increase in the degree of firmness of the lesion is a sign of its partial or complete obliteration and treatment should be maintained until its color has almost completely faded. Such color as remains at that time will usually disappear completely within a year after cessation of treatment. Systemic reactions to injections of varisol or monolate

are very few in number and usually take the form of loss of appetite during the day succeeding the injection.

The results obtained by the use of sclerosing solutions are equally good as those yielded by radium plaques. The latter are more suitable for superficial lesions and, where there is a choice of either method of treatment, radium has the advantage of greater ease of application and complete freedom from local or systemic reactions.

Treatment of Capillary Hemangiomas By Application of Solid Carbon Dioxide

A word should be said about this form of treatment of capillary hemangiomas, introduced by Pusey in 1907[8] It is performed by the application, with light pressure during 7 to 10 seconds, of a block of the solidified gas shaped to the exact size of the lesion. Several applications at intervals of 4 weeks are usually necessary. The principle of this method of treatment is that the extreme cold of the block injures the endothelial cells of the tumor, producing thrombosis and fibrosis. As penetration of the cold extends only to a depth of a few millimeters, superficial lesions alone can be so treated. Blistering of the skin necessarily follows carbon dioxide treatment and ulceration with consequent scarring is not an unlikely sequel of either prolonged time of, or undue pressure during, application. As the best results obtainable with carbon dioxide are not superior to those produced with radium and as the latter method can be employed over a much wider range of depth of lesion with complete avoidance of the possibility of scarring, I am of the opinion that there is no longer any valid reason for the use of carbon dioxide in the treatment of hemangiomas.

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11 Schermerhorn Street

CAN WE SOLVE THE PROBLEM, GOOD MEDICAL CARE

—*Continued from page 187*

because the doctors have wanted it so but because patients have demanded it. X-rays, laboratory and other special tests are required by the patient and are expensive at the present time. But the family physician can give better medical care at a lower cost than anybody else in the world. Going to *big-named* clinics where large fees are charged and then bragging about it to the neighbors upon return and complaining about it to the doctor only makes him want to be in that clinic and charge those fees. Many times the home town doctors are just as capable and a lot less expensive.

SUMMARY

In this paper I have attempted to enumerate the things that, in my opinion, we should do and are doing to have good medical care. I have tried to stress the medical profession's responsibility and the patients' or communities' responsibility in this matter. I have also enumerated and discussed other activities now going on in Louisiana looking forward to good medical care. If all groups work together with this one aim in mind, then it can be accomplished, but no group can solve it alone.

THE SANDERS CLINIC
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A Survey of Brucellosis at Wyckoff Heights Hospital and Report of A Case

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and
Frederick O. Kraus, M.D.
Brooklyn, N. Y.

In an attempt to ascertain the frequency of brucellosis in patients admitted to Wyckoff Heights Hospital, brucellergen tests were carried out in a series of unselected cases. The number of tests and the results will be stated in this paper, along with the report of one representative case.

Beginning in March 1946, brucellergen tests were periodically performed on unselected cases of both Medical and Surgical services. Of 160 unselected cases, 13 showed a positive reaction to the intradermal injection of 0.1 cc. of brucellergen. Reactions were classified as positive only if elevation accompanied erythema at the injection site. Table 1 gives the degree of reaction of these 13 cases, 4+ indicating the most marked reaction. The test material was obtained from the Wisconsin State Board of Health.

TABLE I
GRADES OF REACTION TO BRUCELLERGEN

Hospital No.	*Reaction*	*Hospital No.*	*Reaction*
46-1123	2+	46-2557	1+
46-1141	1+	46-2581	1+
46-1167	1+	46-2694	2+
46-1396	1+	46-5541	3+
46-1481	1+	46-5609	3+
46-1578	4+	47-576	2+
46-1631	1+		

The incidence of positive skin reactions was 8.1 per cent, and of these 53.8 per cent gave minimal positive reaction. One case showed a 4+ as evidenced by an erythematous area measuring 3x5 cm. associated with elevation and induration of the area.

TABLE II
DEGREE OF REACTION TO BRUCELLERGEN

Degree of Reaction	*No. of Cases*	*Percentage Incidence*
1+	7	53.9
2+	3	23.0
3+	2	15.4
4+	1	7.7
Total Positive Reactions	13	8.1

The first case of undulant fever in the United States was reported by Craig in 1905. In the year 1929, 964 cases were diagnosed in the United States. The literature of the present time suggests that the number of clinical cases is very large. Our survey does not indicate a great prevalence of the disease.

In the latter part of 1946 and while the survey of brucellosis was still being carried out, the following case was studied.

Case Report

A 35-year-old white male was admitted to the Medical Service of Wyckoff Heights Hospital on December 6, 1946, with chief complaint of fever each evening, accompanied by profuse perspiration and followed by chilliness.

He stated that he had not been feeling well—"run down"—for the past two years. About 3 weeks prior to admission, he missed his footing while working about the docks and fell into the Erie Basin. Since that time, he had been having episodes which ran as follows. Early in the evening each day, he would develop a fever — usually 101°-102° — and would perspire profusely. Shortly thereafter he felt chilly, and, at times, there was actual

rigor. He noted, however, that ingestion of warm fluid almost immediately controlled the chilliness and rigor. Within one hour after taking two 5 grain aspirin tablets the fever would subside as a rule, and the entire episode end.

The patient was never a member of the Armed Forces, but had been in the State of Virginia two years before and also quite recently where, he says, he was bitten many times by mosquitoes. Never before had he had bouts of fever and chills.

There had been no lacrimation, nor coryza, nor body rash.

Inquiry into bowel habits revealed no diarrhea nor constipation, but he remembered having a colitis lasting four months about one and one-half years ago.

Past medical history was non-contributory.

A review of the systems indicated a poor appetite for the past two months and a loss of eight pounds in the past three weeks. Frequency of urination occurred after each episode described above. Recently there had developed severe headaches beginning at the nape of the neck and travelling upward and forward, terminating in an area over the right eye.

Physical examination revealed an exceedingly well developed male, 6'4" tall, weighing more than 200 pounds. No abnormal physical findings were reported.

Admission urinalysis, along with diazo test, was negative. Hemogram showed 5,120,000 RBC, Hb 106 per cent, 7,850 WBC with 45 per cent Polys and 55 per cent large Lymphocytes. A blood Widal test was negative.

On December 8, 1946, a spinal tap was performed which showed completely normal findings and a negative culture. Mantoux test was negative. Stool examination was negative for typhoid. Chest x-ray showed generalized impairment of illumination in entire right pulmonary field with moderate accentuation of the basal bronchial structures. Brucellergen skin test on December 9th was positive—erythematous area 3 x 5 cm. with definite induration. On December 11th, it was learned that patient drank raw milk in upstate New York in past year and also had had raw milk in Virginia during the previous year. Accordingly on December 12, an agglutination test for brucellosis was performed both by the Wyckoff Heights Hospital and the New York City Department of Health, and was reported as positive, with agglutination in 1/320 dilution.

On December 12, x-ray of chest was repeated and showed practically no variation in previous findings.

On December 16, 0.2 cc. of brucellergen was given intracutaneously. Patient developed a marked reaction locally, and his temperature rose to 102.6° within 24 hours after injection. Because of the fever, sulfadiazine (gr. xxx stat and gr. xv q. 3 hr.) was started, but had no effect in maintaining a normal temperature throughout the 24 hours. Accordingly it was stopped on December 21.

On December 20, vaccination with the brucellergen was begun—0.1 cc. subcutaneously. Temperature rose only to 100.5° in P.M. of December 20 and 99.6° in P.M. of December 21. On December 21, gr. x q. 3 hr. of aminopyrine was started. Headache became less severe.

On December 22, 0.2 cc. brucellergen was given subcutaneously. Temperature in P.M. was 98°. On December 23, he felt improved and head felt normal. Marked induration developed at the site of injection.

On December 24, 0.2 cc. brucellergen vaccine was given. Temperature remained below normal (97°). Aminopyrine was discontinued December 25 because of the subnormal temperature. On December 26, 0.4 cc. of vaccine was given. Temperature in evening was 99.8°. Hemogram on this date showed R.B.C. 4,220,000, Hb. 90 per cent, WBC 7,100 with 40 per cent Polys, 2 per cent Eosinophiles and 58 per cent large Lymphocytes. Sputum sent to laboratory for examination for tubercle bacilli was reported as negative.

On December 28, 0.6 cc. of vaccine was given subcutaneously. Temperature remained near normal, with slight evening rise to 100°. On December 30, penicillin (100,000 units stat and 50,000 units q. 2 hr.) and aminopyrine (gr. x q. 4 hr.) were begun. On December 30, 1946, Jan-

uary 1, 1947, January 3, 1947 and January 5, 1947, 0.75 cc. of vaccine was administered subcutaneously. Since December 30 until time of discharge on January 5, 1947 temperature remained normal throughout the 24 hour periods. The penicillin and aminopyrine were administered jointly as no further fever occurred while they were being administered concurrently.

On January 5, 1947 he was discharged from the hospital with normal temperature, pulse and respiration, and no complaints.

He attended the office of Dr. J. A. B. and received subcutaneous injections of the brucellergen vaccine on alternate days, until a dosage of 1 cc. was administered, and this dose was given alternate days for 14 days. The only other medication administered was aminopyrine, and he continued taking this until Feb. 1, 1947.

On February 17, 1947, the patient developed pain over the left peroneal nerve. This turned out to be a severe neuritis. This condition persisted for several weeks during the convalescent period.

Summary

Of 160 patients selected at random at Wyckoff Heights Hospital, 13 or 8.1 per cent gave a positive reaction to a 0.1 cc. subcutaneous injection of brucellergen, manifested by erythema and distinct elevation at the site of injection.

On the basis of a positive skin test—the test most widely used clinically—in the establishment of a diagnosis, an increase in the incidence of brucellosis, whether clinical or subclinical, is suggested. In our study the skin test was confirmed by agglutination studies in one instance. Multiple tests should be used in all cases. The number of actual cases seems to be very small.

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Correspondence

Thyroid Disturbances

To the Editor:

I want to thank you for the No. 12, Vol. 75 issue of MEDICAL TIMES of December 1947. I read with great interest the article on 'Thyroid Disturbances and Their Therapeutic Approach.' It is an excellent article and one of the best summaries I have ever seen. It is succinct and takes up all the various specialized fields of thyroid knowledge in a way which makes it a pleasure to read.

I have been interested for some time in a rather unusual use of thyroid extract. It is a use which is not mentioned in this article and validly so, since there is little or no scientific confirmation to substantiate the idea which I have had for some time. I have been entirely too busy in my own field of proctology and several avocational fields to undertake research work which would finally indicate whether my theory is correct. However, practical experience gained from my own use of thyroid extract and the observation of patients who have been taking it for some time lead me to believe that there is a definite basis for the idea I have.

It has been shown, time and time again, that the thyroid is involved with aging and with several of the phenomena which accompany aging. While it is not credited with being "*the* master gland," it certainly is close to being one of the masters. Under- or over-activity of the thyroid gland implicates many tissues in the body, one way or another. One of the most interesting to me is the effect of thyroid activity on cholesterol blood level and, probably, cholesterol tissue levels. It is axiomatic that the plaques of atherosclerosis cannot be formed in the presence of a low cholesterol content of the body.

It is well known that atherosclerosis is seldom seen to a marked degree in hyperthyroids. While not intending to make hyperthyroids of people to prevent atherosclerosis, it has seemed to me that a moderate intake of thyroid extract might keep the cholesterol blood level low, and thereby inhibit or prevent the rapid deposit of the atherosclerotic plaques in the arteries.

There is another action of thyroid extract which is not mentioned in the ar-

—Continued on page 215

SPECIAL ARTICLE

Epidermophytoses and Their Therapy

This summarization attempts to cover all of the known therapeutic information on the subject and is designed as a time-saving refresher for the busy practitioner.

Reprints available.*

Epidermophytoses, also called by some practitioners dermatophytoses or dermatomycoses, include ringworm of the hands, feet, groin, axillae, breasts and the hairless skin in general. Although these conditions are particularly prevalent in moist tropical regions they do afflict people all over the world and they were of especial importance during the last war for a survey revealed that no less than 8 per cent or 1 in every 12 of all hospital admissions in the Armed Forces were for cutaneous disease and epidermatophytosis ranked second on the list.

These cutaneous diseases are caused by various types of fungi or Hyphomycetes of which more than 100 species are known to have some effect on the skin. The ones most commonly encountered are Microsporon, Trichophyton, Epidermophyton and Achorion. The clinical names given to the diseases caused by these fungi are respectively: microsporosis, trichophytosis, epidermophytosis and favus.

The trichophyton fungus grows in the non-living layers of the skin and its appendages. No proof has been found that it is capable of multiplying in actual living cells. This fact is of importance since inflammatory reactions do not develop unless actual living structures are invaded and, when this is done by fungi or their products, sensitization develops.

Classification

Ringworm or trichophytosis attacks various parts of the body but in each instance its features assume certain characteristics common to that part. Thus the disease is divided into (1) trichophytosis corporis or ringworm of the body which includes ringworm of the hands and feet, of the glabrous skin (tinea circinata) and of the upper and inner surfaces of the thighs (tinea cruris); (2) trichophytosis capitis and kerion or ringworm of the scalp; (3) trichophytosis barbae or ringworm of the bearded region; and (4) onychomycosis, a fungus infection of the nails.[1]

Other authorities classify the principal forms of epidermophytoses as: (1) vesicular or scaling, observed particularly on the fingers, toes, palms and soles; (2) macular which includes the well-known red definitely marginated lesion occurring principally in the inguinal region, the axillae and beneath the breasts and known as eczema marginatum, jockey-strap itch or dhobie itch and the slightly elevated ringlike patches occurring principally on the face, neck and hands and known as tinea circinata or ringworm of the body; and (3) macerated, the familiar lesion between the fingers or toes and beneath the breasts, observed as an area of clean, white, sodden tissue of varying degrees of thickness.[2]

There may be observed on other parts of the body secondary, localized or widespread eruptions which are allergic in nature and are associated with the cutaneous mycoses, particularly if they are severe or deep. No fungi are present in these eruptions. Intracutaneous allergic substances are produced by the fungi in the original lesions and these are circulated by the blood and lymph to remote sensitized areas of skin where eruptions similar to the tuberculoids are produced. The secondary allergic eruptions produced by the fungotoxins are consequently called dermophytids and the specific name depends upon

* From the Editorial Research Department of the MEDICAL TIMES, 67 Wall Street, New York 5, N. Y.

the organism (epidermophytids, trichophytids, microsporids, favids, monolids, etc.). The dermophytids may be epidermal, dermal, subcutaneous or vascular and occur mainly on the trunk and extremities. Involvement of the epidermis results in the eczematous type, whereas psoriasiform or lichenoid eruptions are observed when the dermis is affected. Urticaria is the form manifested by the vascular type and subcutaneous lesions resemble erythema nodosum. The eczematous and vascular types are most commonly observed on the hands when there is a dermatophytosis of the feet. There may be erythema-scarlatiniforme and erythema-multiforme type lesions in some cases. Areas far from the original site may show lichenoid eruptions in tinea capitis of the kerion type. The dermatophytids may be single or multiple, disseminated or grouped, discrete, pale pink, conical or flat papules and are self-limiting.

Sensitization Determination

Sensitization to fungus may be determined by intracutaneous injection of trichophytin, a filtrate obtained from a fungus culture. A positive reaction is demonstrated by a cutaneous reaction similar to that occurring in a tuberculin reaction. Development of a papulovesicular lesion surrounded by an area of erythema in 48 hours shows that sensitization to the fungus has occurred and that it must have been present for at least two weeks. A negative reaction shows that no sensitization has occurred but if there is present a proven fungal infection it indicates that it must have occurred less than two weeks before or that the resistance of the patient is very low. If there is a dermatitis present but no fungi have been demonstrated a negative reaction further substantiates the fact that it is due to some other etiologic agent. The genus of the fungus has a great deal to do with its specificity. Trichophytin may also be used with the patch test method but the papulovesicular dermatitis may not develop for a few days or several weeks.

The various forms of epidermatophytosis will be treated individually in this discussion.

Dermatophytosis Pedis

Dermatophytosis pedis is also known as dermatomycosis epidermophytica of the of the feet, eczematoid ringworm of the extremities and commonly as athlete's or golf foot. It is an inflammatory, contagious, cutaneous disease of the feet which may involve the hands both as a direct infection and in the form of "ids." There are three types of such infections which are' the vesicular or dyshidrotic; the intertriginous and the hyperkeratotic.[1] It has been established that fungi cause the ma-

Fig. 1. Chronic intertriginous type of tinea pedis showing maceration and fissure between fourth and fifth toes.

jority of these conditions (approximately 50 percent) but it is possible that bacteria and sensitization are responsible for some cases. The important predisposing factor appears to be improper hygiene of the feet.[3] The commonest species of infecting dermatophytes are (1) Tricophyton interdigitale (synonyms for this species are Trichophyton gypseum, Trichophyton mentagrophytes, and Kauffman-Wolff fun-

Illustrations courtesy W. B. Saunders, publisher, "Manual of Clinical Mycology," by Dr. W. F. Conant.

gus); (2) Trichophyton purpureum (synonyms: Trichophyton rubrum, Epidermophyton rubrum, and others); and (3) Epidermophyton inguinale (synonym: Epidermophyton floccosum).[4]

Identification

Examination of stained sections of the horny layer of the skin will reveal the presence of the fungus which appears as short or long, septate, refractile, homogenous or slightly granular mycelia which have a tendency to run parallel to the surface. In some cases they may be found in the vesicle and in the lower layers of the squamous cells which form in the roof of the vesicles. Absence of fungi in eczema differentiates it from epidermophytosis histologically.

Women are less frequently affected than men with this condition and it is more common in summer than in winter.

Vesicular Type

The vesicular or dyshidrotic type is first observed as a deep-seated, slightly elevated vesicle containing a clear fluid with no surrounding edema. Absorption of this fluid takes place in a few days and a brownish crusted and scaly macule results. These vesicles are found on the ventral surfaces of the toes spreading on to the under side of the arch of the foot and eventually covering the entire sole. The diameter of these vesicles varies from 2 to 3 mm. and they are colored with a bluish tint. Various sized bullae may be formed if these vesicles coalesce. They are usually tense and deeply situated in the skin. Heaping of dried crusts will turn the lesions yellowish brown and keratotic. Such lesions may heal spontaneously. New vesicles frequently develop on old drying patches. Burning and itching accompany these vesicles and relief may be provided by opening the lesions and removing the clear glycerin-like fluid.[1, 5]

Secondary infection may accompany this condition or may develop in these vesicles if they are allowed to progress without therapy. This may in some cases be worse than the primary lesions. Such conditions may result in infected dermatophytic bullae on the sole, which infection may extend to the lymphatics causing lymphangitis or lymphadenitis; in non-suppurative cellulitis of the toes; in fissures between or beneath the toes; in weeping areas where the stratum corneum was denuded; and in pustules or other evidence of pyogenic infection.

Hyperkeratotic

The second type is the squamous hyperkeratotic in which the skin develops an erythema and eventually becomes keratotic and scaly. This type occurs more frequently on the soles, the sides, the dorsa and the toes and may result in a diffuse keratoma of the sole. Microscopic examination is employed to observe the fungi present. Epidermophyton rubrum is frequently the causative agent.

Intertriginous

The most common type of epidermophytosis is the intertriginous which begins as a fissure at the base of the fifth toe and spreads to the other interdigital webs in many cases but not in all. In some the skin between the fourth and fifth toes of the foot may be the only part affected. The primary lesions are observed as patches of white sodden epidermis and fissures between and under the toes. This condition is accompanied by hyperhidrosis, maceration and some scaling between the toes. In some cases only scaling may be observed in which instances fungi may not be present. Pruritus may be slight, severe, or absent.

Differentiation

It is important that epidermophytosis be differentiated from pustular bacterid, dyshidrosis and contact dermatitis. Dyshidrosis frequently starts on the big toe on the dorsal side and diagnosis is made on the basis of microscopic examination of scrapings of the area. Shoe polish, fungicides, antiseptics, dye from stockings and others may cause a contact dermatitis which usually occurs on the skin of the dorsum of the foot, rarely on the sole. Microscopic examination will show the absence of fungi in such conditions.

Pustular bacterid is characterized by primary lesions which are minute, grouped and frequently hemorrhagic vesicles rapidly developing into pustules. They are observed on localized areas of the soles and palms and at points of pressure on these and occur in pruritic successive crops. They may be unilateral or bilateral and are highly resistant to therapy. This condition has been erroneously called "pustular psoriasis" when adherent, dry, psoriasiform scales develop on the areas as a result of successive crops. In such instances cure frequently is affected by the removal of a distant focus of infection such as tonsils, sinuses, tooth socket and others.

Complications in epidermophytoses may occur as a result of secondary infection with pyogenic cocci which results in cellulitis, lymphangitis or erysipelas. "Ids" or the fungi themselves may also cause complications. Another complicating factor is eczema.

Prophylaxis

Prophylaxis is most important both in preventing initial attacks as well as recurrence or reinfection.

The subject of recurrence *versus* reinfection has always induced lively discussion. A great deal depends on whether the causative fungi are eliminated in the cured cases, or still remain in a quiescent but viable form on the skin. It has been accepted that fungi can remain for a long period within diseased nails without causing a reaction. Opinion is now swinging to the belief that recurrences are more likely than reinfections. The indication is for prophylaxis directed at the feet, rather than the environment, as that method is less bother and expense.

Sterilization of Shoes and Clothing

The first point in prophylaxis or treatment is the establishment of a definite technic for sterilization of shoes. Leather definitely limits the possibilities. Gases are preferable to liquids, but formaldehyde vapor does not satisfactorily penetrate into the cracks. The following method has been recommended for mass sterilization and reconditioning: Immerse the entire shoe in 1 per cent formaldehyde solution for 5 minutes. For supplementary mechanical cleaning wash the shoes in a 0.3 per cent soap solution, followed by washing in water for two minutes. Restore pliability by immersion in a bath of 10 per cent oil emulsion with 0.5 pentachlorophenol (prevents mold during drying).[6]

To sterilize a small number of shoes the following method is recommended:[7]

1. Cleanse the shoes of any extraneous debris or dirt. Use any mild soap and water.
2. Dry as well as possible with a dry cloth.
3. Put in each shoe a pad of cotton; spread it out to make an insole.
4. Pour onto this insole (in each shoe) 1 teaspoonful of solution of formaldehyde U.S.P. diluted 1:10.
5. Put the shoes in a paper box, close the lid and wrap in paper. Allow the shoes to remain in this box for at least six hours.
6. Remove them from the box, throw away the cotton and air the shoes for twenty-four hours.
7. Apply saddle or harness soap liberally to all parts of the shoes, inside and out. Allow this to dry.
8. Polish shoes as usual and wear.

Clothing does not need to be destroyed but should be washed, soaked in a 1:1000 solution of bichloride of mercury for a day, rinsed in water and dried.[2] Wearing of sandals has been found to be of value since they allow for aeration, prevent accumulation of sweat and allow free movement of toes and consequently good cutaneous circulation is favored.[8]

Exposure

Infection from bathroom floors, swimming pools or dressing rooms should be avoided. If there is such exposure sodium propionate in 1 per cent concentration, or boric acid, 10 per cent, in powdered talc should be dusted on the feet and between the toes every night and morning or following a bath. Daily use of one of the

following dusting powders has also been recommended:

Menthol	2.0
Boric acid	50.0
Camphor	5.0
Salicylic acid	2.0
Titanium oxide	1.5
Talc q.s. to make	100.0[1]

Salicylic acid	2.0
Boric acid	6.0
Zinc stearate	3.0
Exsiccated alum	1.0
Starch	10.0
Talc	78.0[9]

Zinc peroxide	10.0
Tannic acid	5.0
Boric acid	20.0
Bentonite	10.0
Talc	55.0[9]

Undecylenic acid-Undecylenate Powder (pigmented)	
Zinc undecylenate	20.0
Talc	76.0
Undecylenic acid, grade AA	2.0
Dibenzo thio indigo (red)	2.0[10]

The following ointment was also found effective:

Undecylenic acid-Undecylenate Ointment (pigmented)	
Undecylenic acid, grade AA	5.0
Triethanolamine	3.0
Zinc undecylenate	18.0
Propylene glycol, N.F.	10.0
Carbowax 1500	19.0
Carbowax 4000	29.6
Water, distilled	15.0
Dibenzo thio indigo (red)	0.4[10]

Immersion of the feet for 1 hour in a 1 per cent freshly prepared solution of sodium hypochlorite may also serve to prevent the infection.

Public bathing places, gymnasiums, etc., sometimes employ a common foot bath. Such practice is becoming discredited for prophylaxis for several reasons: difficulty of maintenance of the chemical at fungicidal concentration, the short period of exposure, and difficulty in enforcement of use. Sodium hyposulfite has been shown to be worthless in *in vitro* tests of fungicidal value and sodium hypochlorite deteriorates too rapidly. People cannot be forced to walk through a common, often filthy, foot bath and such a bath often requires exposure of an hour to be effective.[11]

The Army found during World War II that more progress was made in reducing the disease by thorough scrubbing of shower rooms and barrack floors and the exposure of flooring and duck-boards to sunlight, where practicable, than through use of a compulsory foot-bath.

The following program of prophylaxis should be emphasized to the patient:

1. Keep the feet clean and dry, with special attention to places between the toes. Dry these carefully but not so hard as to irritate the skin.
2. Air shoes and socks when not in use.
3. Under special conditions, keep the feet elevated when at rest (where the conditions predispose to intertrigo, as with marching soldiers).
4. Shoes should be selected that are as light and well aerated as is compatible with working conditions.[7]
5. A dusting powder such as mentioned should be dusted on the feet and between the toes every night and morning.

Epidermophytosis of the Hands

Epidermophytosis of the hands is not nearly so common as that of the feet but it is caused by the same fungi and follows much the same pattern as to types or varieties. The clinical pictures of the various types are the same as for the feet. Differentiation between dyshidrosis and the dyshidrotic form of epidermophytosis is dependent upon recognition of the fungus under the microscope. The latter closely resembles the former clinically except that it tends to be unilateral and the lesions are less disseminated.

In the squamous hyperkeratotic type the picture is also similar to that seen with the feet. A slight erythema accompanied by keratosis and scaling may be observed over the entire palm with isolated patches on the dorsum of the hands and fingers

Fig. 2. Chronic vesiculopustular dermatophytosis of palm.

resembling calluses. The intertriginous variety is rarely encountered on the hands. If observed it so closely resembles monilial infection that diagnosis by means of microscopic or culture identification is necessary.

The feet, ankles and calves frequently exhibit dermatophytids which are characterized by pruritic eczematoid patches varying in size. Large areas of the limbs or trunk may sometimes be involved and rubbing may cause lichenification to such an extent that the original condition is hidden.

Since dyshidrosis and epidermophytosis may be present at the same time diagnosis is difficult. If the primary epidermophytic focus is removed and the vesicular eruption does not recur the condition is undoubtedly dyshidrosis.[1]

Differentiation from Industrial Dermatitis

Since contact or industrial dermatitis so commonly occurs on the hands criteria have been set up for the differential diagnosis of tricophytids from this condition as follows:[5]

1. Trichophytids may be suspected only if there is an active fungus infection of the feet.

2. Positive diagnosis of trichophytid can be presumed if trichophytin tests give positive reactions.

3. Trichophytids improve under adequate therapy whereas most cases of industrial dermatitis do not show rapid improvement until the irritant has been removed from contact with the patient. No improvement is shown in industrial dermatitis if the patient continues the same work.

4. If trichophytids are present therapy of the fungus infection of the feet will also improve the hand condition along with treatment of the latter, whereas no improvement would be noted in contact dermatitis.

5. Trichophytids appear more frequently on the palms and on the sides of the fingers, flexor portion, whereas contact dermatitis appears on the dorsum of the hands.

6. Patch tests with chemical irritants are necessary. If negative then there are trichophytids. If there are positive reactions in both patch and trichophytin tests a combination of both conditions should be suspected, or one or the other may be giving false indications.

This differentiation may appear oversimplified to some. No attempt has been made herein to discuss the many varied ramifications of industrial dermatitis.

Therapy

Some cases of epidermophytosis have been found to resist all therapeutic measures whereas others have been cured very quickly by simple remedies. In respect to therapy there are three stages of epidermophytosis: acute, subacute and chronic.

One of the predominating symptoms in epidermophytosis is itching and sometimes is the only symptom because of its great annoyance, which brings the patient to the physician. In many cases it is necessary to relieve this pruritus before fungicidal

therapy can be instituted. For this purpose ointments, creams or lotions containing such drugs as phenol, menthol, ethylaminobenzoate or others of the local anesthetics may be employed. Some preparations for this purpose consist of (a) camphorated chloral, hyoscyamine oleate, menthol and camphor in an ether-alcohol-chloroform vehicle or in an ointment base and (b) calamine, zinc oxide and benzocaine in a soft cream base. In very severe cases sedatives such as phenobarbital or other related compounds may be necessary.

Acute State

Wet dressings and lotions are indicated in the acute stage and particularly if pyogenic infection is present. The wet dressings which have been effectively employed include: 1 per cent aluminum acetate, 0.25 per cent aqueous solution of silver nitrate, 3 per cent solution of boric acid, 2 per cent solution of resorcin or 1:10,000 potassium permanganate.[1] One group[9] recommends the use of hot potassium permanganate (5 gr. or 0.3 Gm. in 3 quarts of water) soaks for 20 minutes three times a day. Solutions up to 6 per cent can be employed to paint areas of ringworm on the body. The following lotion should be applied after the soaks have been used:

Sulfur	4.0
Resorcin	2.0
Zinc oxide	25.0
Talc	25.0
Bentonite	5.0
Water (or water and alcohol equal parts)	60.0

Shake well before using.

Fissures should be painted with 5 per cent silver nitrate solution twice a day. Before starting treatment vesicles should be opened aseptically.

Soap and water should not be used on the affected areas while they are in the acute stage and should be resumed only after the condition has subsided. Some believe that soaps and water are not contraindicated if the areas are subsequently thoroughly dried, as this may be the only way to cleanse the skin of pus, crusts, dried secretions, etc.

Numerous substances have been investigated for their fungicidal properties and one authority states that the following have been proven clinically effective: iodine, benzoic acid, thymol, salicylic acid, resorcin, sulfur, gentian violet, sodium hypochlorite, ammoniated mercury and formaldehyde. The location of the disease on the skin and the stage of eruption serve as guides for choosing the proper fungicide.[1] Camphor spirit is advocated by some practitioners.

Resorcin and salicylic acid are not only fungicidal but also possess some keratolytic effect and thus are useful where exfoliation is desired. This is frequently necessary on the soles of the feet where the fungus is protected by a thick layer of overlying skin. Salicylic acid is preferable and is believed to be superior. It is employed in 2 to 5 per cent strength, varying according to the amount of exfoliation necessary. Resorcin is used in 5 to 30 per cent strengths in alcohol and applied morning and night.

Subacute Stage

As the acute stage subsides the vesicular patches on the foot become scaling red patches. Thickening, maceration and fissures of varying depths occur and the condition assumes the subacute stage. The permanganate soaks and the sulfur-resorcin lotion described previously should be combined with treatment with one of the following ointments applied only at bedtime:[9]

Keratolytic Ointment	
Sulfur	3.0
Salicylic acid	3.0
Cetyl tar distillate	4.0
Duponol	1.0
Petrolatum	38.0
Stearyl alcohol	18.0
Cetyl alcohol	7.0
Mineral oil	25.0[9]

This is a complex formula which is available commercially.

Whitfield's Ointment (One-half Strength)

Salicylic acid	3
Benzoic acid	6
White Ointment U.S.P. to make	100[9]

Whitfield's ointment in full strength should not be used except on very tough areas of skin or in chronic stages. If evidence of irritation is noted from use of the half strength ointment it may be desirable to use it in one-quarter strength.

Castellani's paint has been used effectively in some cases in the subacute stage.[1, 9]

Castellani's Paint

Saturated alcoholic sol. basic fuchsin	10.0
Aqueous solution phenol (5 per cent)	100.0
Filter and add:	
Boric acid	1.0
After 2 hours, add	
Acetone	5.0
2 hours later, add	
Resorcin	10.0

This preparation should not be used after one month's time since it is not stable after that time.

Another lotion which may be used is:[9]

Salicylic acid	3.0
Thymol	1.0
Alcohol (70 per cent) to make	100.0

Snow's paint is also widely used:[1]

Acid salicylic	3.0
Sodium ethyl mercuri thiosalicylate tincture	100.0

Calamine lotion with 2 per cent ichthyol is sometimes effective in the subacute stage.

Chronic

The lesions between the toes and on the feet are frequently resistant to treatment and become chronic. In this stage they may become sodden, odorous patches with fissuring between the toes or they may thicken into hyperkeratotic plaques with scaling and fissuring. The soles in this instance may even have vesicles present. They may also take the form of red, thickened and indurated dry plaques on the sole, around the heel and along the sides of the feet.[2] The following ointments are recommended for treatment of this chronic stage:[9]

Deek's Ointment

Salicylic acid	2.0
Eucalyptus oil	12.0
Bismuth subnitrate	12.0
Hydrous wool fat, Ammoniated mercury ointment, of each, to make	100.0

Apply at bedtime only.

Dioxyanthranol Ointment

Anthralin	0.1-1.0
Petrolatum to make	100.0

Apply lightly once or twice daily to chronic hyperkeratotic and scaling plaques.

Chrysarobin Ointment

Chrysarobin	0.1 or even 5.0
Petrolatum to make	100.0

The chrysarobin must be fresh and the ointment should be freshly prepared.[2] Some recommend use of a 2 per cent chrysarobin ointment.[1]

In chronic cases the lesions should be clean at all times. It may be necessary to remove hyperkeratotic tissue by means of sandpaper, curets, or scissors.

Miscellaneous Formulas

Various formulas have been recommended from time to time as being effective. They are presented here in a group.

Thymol	0.13
Salicylic acid	4.00
Iodine tincture	24.00
Alcohol (95 per cent) q.s. to make	30.00[1]

This is to be painted on toenails and between toes once a day. If the skin is tender or sensitive it may be used in half strength. In case of irritation it should be alternated with a soothing preparation.

Salicylic acid	4.0
Precipitated sulfur	5.0
Wool fat q.s. to make	30.0[1]

The above is to be applied to the affected areas morning and night. An aqueous solution of gentian violet, 1 per

cent, is sometimes employed morning and night as a paint.

The following lotion is to be applied for 3 days only:

Salicylic acid	1.0
Resorcin	1.0
Acetone	1.0
Alcohol (70 per cent) q.s. to make	30.0[1]

Another routine of treatment[1] consists of a 1 per cent sulfur and 0.5 per cent salicylic ointment applied to the affected areas twice a day and painting with a solution of iodine 2 per cent in benzol. If desired the strength of the ointment may be increased to 3 per cent sulfur and 2 per cent salicylic acid.

For scaling between the toes which is usually tineal the following is stated to be of special value:[1]

Clove oil	0.1
Cinnamon oil	0.1
Iodine crystals	1.0
Potassium iodide	2.0
Salicylic acid	2.0
Benzoic acid	4.0
Alcohol (70 per cent) q.s. to make	100.0

It should be used regularly and will stop and prevent recurrence of the scaling. This product is stable for 4 to 6 weeks.

Ethyl Chloride

Ethyl chloride has been employed with varying results in the treatment of epidermophytosis. It is applied daily by means of a spray until the skin temperature is lowered sufficiently to bring out the white surfaces. Vesicles are not opened but the spray is applied to the entire area. In case of macules or larger areas the margin only is sprayed 2 to 4 times dependent upon the size. The first few sprayings of the more resistant lesions of the hands and feet are applied only to the edge of the lesion. As healing progresses the islands of denuded epithelium are sprayed separately.[2] Some have reported excellent results with ethyl chloride believing it to be superior to any other physical or chemical applications.[12, 13] One authority stated that no other drug be used in conjunction with it and that fungicidal drugs in ointment bases retarded healing.[14] However, other workers reported that they observed clinical improvement immediately as evidenced by the subsiding of the vesicles and pustules, healing of denuded areas, increased dryness of the skin and regression of hyperhidrosis but in most cases the condition recurred within ten days after treatment was stopped. Consequently they recommended that ethyl chloride be used as an adjunct in therapy since it did aid by providing dryness of the skin, an environment antagonistic to the growth of the fungi.[15, 16]

Penicillin

Penicillin has been investigated for its value and found in some cases to be effective in eliminating secondary infection, thus possibly increasing the rapidity and frequency of cure.[17] One authority has stated that it should be administered parenterally and not locally.

Fatty Acids

Certain fatty acids received a great deal of attention during World War II because of their fungistatic activity. Of those studied propionic, undecylenic and caprylic acids and their salts were found to be most effective. The war-born impetus which these drugs received is continuing. However, it has been stated that their claimed superiority over any of the other agents has not yet been definitely demonstrated.[2]

One of the first of these to show promise was the sodium or calcium propionate, substances customarily used to inhibit mold growth in bread and dairy products. After it had been shown that the propionates were effective against human pathogenic fungi they were tested against otomycosis, thrush and blacktongue.[19, 20]

The propionate was used in 10 per cent concentration in powder and ointment form. The ointment was used at night, on the toes and soles, removed in the morning, and the powder dusted on. This appeared to be an ideal method of therapy.

The formula of the ointment used is:

Sodium propionate	10.0
Propylene glycol	10.0
Zinc stearate	12.0
Carbowax 4000	45.0
Water	23.0

A survey of various methods of therapy resulted in the recommendation of the following powder:[21]

Sodium propionate	20.0
Talc	79.5
Polychloro copper phthalocyanine (green)	0.5

Propionic acid and its salts are available commercially in liquid, powder and ointment forms.

The undecylenic acid preparations showed a higher percentage of cures than with most other fungicides but these did not appear to be greatly superior to those achieved with sulfur and salicylic acid. However, the undecylenate ointment is less irritating than any other preparation of similar fungicidal strength. The risk of initiating treatment with tincture of iodine or sulfur-salicylic acid ointments of the required strength in cases with extended vesiculation, erosions, rhagades, and edema of the feet should never be taken, whereas this can be done with the undecylenate ointment without the slightest danger of irritation.[22, 23] Various formulas (in addition to those given under prophylaxis) have been used as follows:

Undecylenic acid	5.0
Triethanolamine	3.0
Zinc peroxide	10.0
Carbowax base to make	100.0[22]

Undecylenic acid	5.0
Zinc undecylenate	20.0
Greaseless ointment base to make	100.0[23]

This cream should be massaged in thoroughly at bedtime. For use during the day the two active ingredients should be incorporated with talc. These preparations may also be used prophylactically.

Undecylenic acid and its salts (sodium, zinc and copper) are available commercially in both ointment and powder form. Various combinations with other fungistatic agents are also available.

A 10 per cent sodium caprylate ointment has also been recommended for treating epidermophytosis. A comparative study showed that it gave results superior to one-half strength Whitfield's ointment, propionate-propionic acid preparations and to undecylenate-undecylenic acid ointment. No irritation or sensitization has been noted from daily and protracted use. The ointment used is as follows:[24]

Caprylic acid	10.00
Sodium hydroxide	2.45
(90 percent of theoretical amount required)	
Diethylene glycol mono-ethyl ether	3.00
Carbowax 600	47.50
n-Propyl alcohol	10.00
Zinc caprylate	5.00
Water	22.05

Ten per cent of the caprylic acid is left free for a final pH adjustment of 8.0.

Sulfonamides

Another formula which has been recommended for fissures, abrasions and blisters on the feet is a sulfathiazole and tannic acid impregnated gauze with the following formula:

Sulfathiazole	5.0
Tannic acid	10.0
Propylene glycol	25.0
Carbowax 1500	25.0
Carbowax 4000	35.0

A survey[25] of six different forms of treatment was made: Whitfield's ointment; 10 per cent boric acid in powdered talc; a mixture of alkyldimethylbenzyl ammonium chlorides; metacresyl acetate; potassium mercuric iodide and iodocholeate. Results showed that the boric acid and metacresyl acetate were both highly efficient, with Whitfield's ointment a close second. The other compounds were not deemed suitable for this particular purpose. Metacresyl acetate is employed either in the pure form or in dilution with oils or alcohol.

Various preparations have been used in the treatment of epidermophytoses. Among these are included the following: (1)

Anthralin in concentrations of 0.1 to 1.0 per cent in a vanishing cream base composed of potassium stearate, potassium oleate and distilled water (begin with the smaller dosages because of a tendency to irritate the skin); (2) In addition to being used for diagnosis certain fungus extracts, vaccines and antigens, prepared from mixtures of various organisms, are available for the treatment of these conditions. (3) Salicylanilid in an ointment base of Carbowax for ringworm of the scalp; (4) Trimethyl cetyl ammonium pentachlorphenate 3.2 per cent, buffered with undecylenic acid in a vehicle of surface active agents or in 2 per cent strength with undecylenic acid 1 per cent in a greaseless ointment base or 1 per cent buffered with undecylenic acid in a shampoo; (5) Triacetylpyrogallol in powder and ointment form; (6) Combination of secondary-amyltricresols and orthohydroxphenylmercuric chloride, each 0.1 per cent with benzoic acid and salicylic acid, each 2 per cent; (7) Various combinations of chloretone 3 per cent with alcohol 48 per cent, salicylic acid 2 per cent, benzoic acid 2 per cent and malachite green 0.1 per cent or 5 per cent with salicylic acid 4 per cent and mercury salicylate 4 per cent in an ointment base; (8) Powder containing sulfanilamide and ammoniated mercury, colored to blend with the skin; (9) A new chemical combination soon to be marketed is 8-hydroxyquinoline benzoate in alcohol (43 per cent by volume); and (10) Many of the common antiseptics.

It must be remembered in treating epidermophytoses that various remedies may have to be tried before the patient responds and that the therapy varies with the individual. Of the many formulas and drugs mentioned there are a great many commercial preparations available possessing varying combinations and strengths of the different fungicides.

X-Rays

Superficial x-ray therapy in fractional dosage has been of value as a palliative in some cases of nearly all clinical varieties of epidermophytosis resulting in the same pronounced benefit as observed in other eczematoid skin lesions. X-ray has been particularly helpful in the acute eruptions of the hands and feet, both in direct infections and dermatophytids. While in the acute stage wet dressings of 1:10 dilution of solution of aluminum acetate or boric acid solution should be used along with x-ray. After the condition has subsided more active fungicidal therapy may be used. In chronic intertriginous lesions and keratotic types of dermatophytid, response is more rapid if several fractional x-ray treatments are given. The usual dosage is 50 to 150 r units of unfiltered radiation every 5 days or longer for 3 to 6 treatments (usually sufficient). In recurrent attacks of epidermophytosis or dermatophytid it is necessary to avoid excessive use of x-ray since the same areas are usually involved and radiodermatitis may result. X-ray does not kill fungi therefore this therapy is not curative. Irradiation is also used in treating any lichenification which may occur simultaneously or superseding epidermophytosis. Itching is usually relieved after the first treatment. The dosage is fractional and should be below that required to produce erythema or epilation. Only a few treatments are needed to control this condition.[1]

Tinea Circinata

Tinea circinata is also known as trichophytosis corporis, tinea trichophytina corporis, herpes circinatus and ringworm of the body. It is an inflammatory contagious affection of the glabrous skin and occurs in the following varieties: macular, vesicular, tinea, profunda or trichophytic granuloma, agminate folliculitis and perifolliculitis suppurativa conglomerata of Leloir. This condition occurs in both sexes and is more frequently observed during childhood and adolescence, seldom occurring after middle life. It is caused by the large-spored ringworm (Trichophyton).[1]

Identification

In order to examine the fungus and to determine its presence scales of skin or the everted roof of a vesicle are placed on a glass slide, a few drops of aqueous solution of potassium hydroxide 10 per

cent added and the whole covered with a cover glass. Moderate heat is then applied until the material is macerated. Examination under the microscope (low power) reveals the hyphae and spores. Polychrome methylene blue or Welch's stain may be used if desired. Cultures of the fungus can be made from material collected in the same way on Sabouraud's proof medium. Identification of the presence of fungus serves as a diagnostic aid in differentiating this condition from seborrheic dermatitis, psoriasis, pityriasis rosea, neurodermatitis and lupus erythematosus.

Diagnosis

Tinea circinata is first observed on the appearance of one or more pea-sized, nummular, or larger, circular, circumscribed, slightly erythematous, dry, scaly patches which may be slightly elevated at the margin or may not be raised above the level of the skin. More inflammation and scaliness are present at the margin and to the naked eye the center may appear untouched. A diameter of several inches may be attained by this annular outline and in some instances there may be concentric circles. After reaching a diameter of ½ to 1 inch the patch usually remains at that size or disappears.

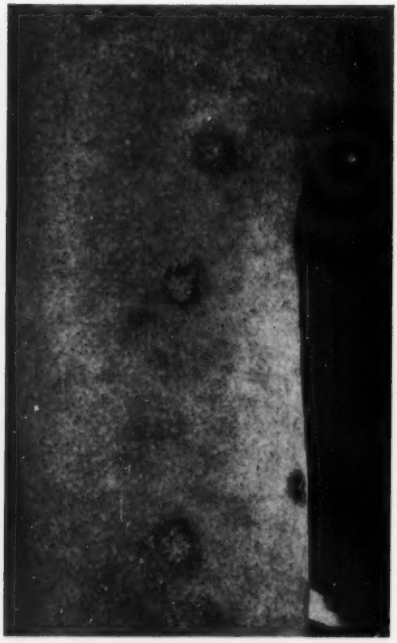

Fig. 3. Annular vesiculopustular tinea corporis.

Other types of this condition are evidenced by vesiculation and exudation and the inflammation spreads peripherally forming circular crusted patches. These also clear at the center forming ringed, thickly crusted lesions. There may be slight itching. In some cases they spread rapidly and in children may cause some constitutional reaction. Cases are found in which there are multiple disseminated patches of the macular or dry and vesicular or moist varieties involving most of the skin surfaces. There may also be observed a deep pustular variety which is follicular. This type has a seropurulent or mucopurulent discharge and may appear to be carbuncle or kerion. It is known as trichophytic granuloma or tinea profunda. Agminate folliculitis is a deep-seated type which flattens centrally and extends peripherally. This type frequently leaves areas of atrophy whereas the superficial and inflammatory forms do not. The inflammatory form has a shorter course and may disappear spontaneously as may also the superficial form. This latter type, however, may persist indefinitely.[1]

Prophylaxis

For prophylaxis against this condition the skin should be washed with soap and water, dried and dusted with a nonallergic dusting powder. Contact with humans, animals or birds having this disease should be avoided.

Therapy

Iodine tincture, applied daily for 3 days, is usually effective in eliminating the macular and vesicular varieties. Sulfur or Whitfield's ointments are also effective. Wet dressings of potassium permanganate (1:8000), solution of aluminum acetate (1:15), or resorcin (2 per cent) are indicated in cases of edematous and eryth-

ematous lesions. Silver nitrate, 0.5 per cent aqueous solution, is efficacious in the profunda and follicular types and 5 per cent sulfathiazole ointment in the suppurative type. Gentian violet, 1 per cent in water or alcohol, may be applied 3 times daily; salicylic acid, 15 to 20 per cent in alcohol or resorcinol, 10 to 30 per cent in equal parts of alcohol and ether are also employed. Mercury salicylate, 1 to 3 per cent or ammoniated mercury, 2 per cent in ointment or paste form, or Whitfield's ointment, one half strength, are used if the area becomes dry and scaly.

Occlusive hot aqueous dressings for several days are necessary for greatly infiltrated lesions. This is accomplished by applying to the area several thicknesses of gauze soaked in a hot aqueous solution of resorcin, 3 per cent. The gauze is covered with wax paper and allowed to remain overnight. During the day this is repeated for two hours several times. Convalescence is hastened by radiotherapy in two doses of epilation strength, at 10 day intervals.

The various therapeutic agents discussed under epidermophytosis of the hands and feet have also been used successfully in the same manner in tinea circinata. Ethyl chloride is also employed. In those cases where the vesicles are hidden by actively inflamed raised margins spreading peripherally the spray should be applied to the entire raised margin once a day for 2 days in succession. When the inflammation disappears the discrete vesicles are then treated as primary lesions.

Tinea Cruris

Tinea cruris is also known as epidermophytosis cruris, tinea trichophytina cruris, eczema marginatum, jock itch, red flap and dhobie itch. It is more commonly found in males and is caused by Epidermophyton inguinale. The fungus is identified by the fact that it forms a yellow and powdery culture and it attacks the stratum corneum but not the hair.

It is first observed as a small erythematous, scaly or vesicular crusted patch, spreading peripherally, partially clearing in the center and appearing chiefly upon the

Fig. 4. Tinea cruris showing sharp margination and active periphery.

upper and inner surfaces of the thighs. The patch has a curved, well-defined border, especially on the lower edge. As it progresses it may spread downward upon the thighs or backward on the perineum or about the anus. The penoscrotal fold or sides of the scrotum may be involved. Only one groin is usually affected although in some cases both sides are involved.

Differential Diagnosis

In diagnosing this condition it is necessary to differentiate between it and erythrasma, moniliasis of the groin, superficial form of dermatomycosis trichophytica, intertrigo, seborrheic dermatitis and neurodermatitis. Microscopic examination reveals a different fungus in both erythrasma and moniliasis. In the former the patches are not elevated and the color is brownish-red; and in the latter small marginal areas of pustulation are usually evident. A more rapid course and involvement of the hairs of the inguinal and pubic regions serve to distinguish dermatomycosis trichophytica. No fungus is observed in intertrigo, seborrheic dermatitis and neurodermatitis. Intertrigo also lacks the pronounced border. Sharp definition and the uniform, smooth, red surface in seborrheic dermatitis differentiates it. Symmetrical lesions on other areas of skin, the history, presence of lichenification (frequently) serve to distinguish neurodermatitis. Tinea cruris

runs a persistent course and relapses are usual.[1]

Prophylaxis

Prophylactic measures include careful drying after bathing and prevention of excessive perspiration and chafing. A mild antiseptic and nonallergic dusting powder should be applied to the body.

Therapy

Treatment first consists of soothing medicaments until fungicides can be tolerated. Such medicaments include solution of aluminum acetate, 1 per cent, calamine lotion with 1 per cent ichthyol or a saturated solution of boric acid. Solution of sodium thiosulfate, 10 per cent, has been found of value after the inflammation has subsided. Treatment is continued until healing takes place when the soothing lotions should be used again. The following formulas have shown value:[1]

Iodine tincture	10.0
Alcohol	50.0
Water q.s. to make	100.0

This should be painted on the areas 3 times daily followed by talcum powder.

Resorcinol	3.0
Zinc oxide	20.0
Talc	20.0
Glycerin	10.0
Alcohol	40.0
Water	40.0

The above is applied twice daily as are the next two formulas as well.

Chrysarobin	0.3
Flexible collodion	30.0
Precipitated sulfur	1.0
Salicylic acid	1.0
Aquaphor	30.0

It may be necessary to repeat the scaling treatment. If the scrotum is screened with lead the eczematous phase may be decreased by x-ray in small fractional doses of 60 to 75 r.

The fatty acid preparations are also indicated in this condition. The propionate powder preparations may be somewhat less effective than the undecylenate powders but they were found by some to be less irritating.[20, 21] However, both types are definitely less irritating than some of the preparations previously used.

As mentioned previously there may be an associated pyogenic infection in skin diseases caused by fungi. It is therefore desirable to use some non-irritating antiseptic. The following formula is recommended:

Undecylenic acid	5.0
Triethanolamine	3.0
Neutral acriflavine	3.0
Water	10.0
Triacetin	10.0
Propylene glycol	12.0
Carbowax 1500	10.0
Carbowax 4000	50.0

Some feel that the above formula is too complicated and therefore prefer more simple ointments such as ammoniated mercury. Liquid or antiseptic compresses or tinctures are preferred by some to the ointments or creams.

A recent study employed gauze impregnated with penicillin in carbowax base for treating such conditions of the feet and found that it was effective in some of the more severe cases. However, in the less severe cases healing occurred without the aid of an antibacterial agent. It is believed, therefore, that in cases showing only sensitive cocci, penicillin is effective, and that in others with mixed cultures, its inhibition of sensitive strains is decisive in controlling the infection. Routine use of penicillin probably increases the overall frequency and rapidity of cure. A comparison of similar cases treated with sulfathiazole 5 per cent combined with tannic acid 10 per cent, zinc peroxide 20 per cent and benzalkonium chloride 0.5 per cent showed that penicillin was more effective since the percentage clearing was higher and the average time involved was lass. The cases compared were those in which the feet had been bandaged with carbowax gauze impregnated with the antiseptic. The rapidity of response was striking since in 3 days penicillin controlled the infection in 40 per cent of the cases

whereas in the same length of time sulfathiazole only controlled 20 per cent, zinc peroxide 18 per cent, and benzalkonium chloride 12 per cent.[17]

Measures should always be taken to decrease the susceptibility of the skin to the fungi. This can be accomplished by using dusting powders and lowering the pH of the skin by use of weak acids. Boric acid incorporated in a dusting powder makes a suitable preparation which does both. Fungistatic substances might also be added to this. A paint for the skin which would lower the pH can be made of 0.4 cc. of concentrated hydrochloric acid in 100 cc. of 70 per cent alcohol. This should be applied several times a day. The ability of the skin to tolerate various degrees of pH appears to be related in some manner to the pathogenicity of bacteria and fungi.

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GENERAL PRACTICE

Medicine and the American Academy of General Practice

Cyril W. Schumacher, M.D.
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The institution of medicine was built on a remarkable humanitarian idea, on a footing of individual initiative, fortified by the willingness of the family doctor to work, to slave, and to care for the indigent as well as the wealthy. But now, perhaps unwittingly, American medicine has grown weak and inadequate to the extent of exclusion and regimentation of the majority of medical men who make up the profession.

Many medical groups have grown so powerful that they have reached the stage where they are protecting themselves rather than keeping up with recent developments which are the result of a change in economic trends. This has resulted in submergence of the importance of the individual doctor.

Medicine has failed to the extent that the individual doctor will not be able to continue on unless he is empowered with freedom to act in a give and take transaction with the hospitals, the various organizations and associations.

What is needed is a bit of torch carrying by a new group with new ideas, new principles, new methods and new management. The American Academy of

—Continued on page 213

Clinical Notes, Suggestions and New Instruments

Removal of Cerumen

New Technics

The removal of cerumen is a task that devolves upon nearly all practitioners now and then and possesses both minor and major aspects. The usual situation is a minor one but there can be challenging cases, requiring "sapping and mining" operations. A considerable amount of talent and ingenuity has engaged itself in the invention and construction of such devices as those of Fowler (1), Unger (2) and Weille (3)—"engineering" apparatus as formidable and efficient as some of medicine's most impressive armamentaria, but too complicated and expensive for ordinary use; they suggest how important this "everyday" problem really is.

There are times when the expert total removal of cerumen with a small hook under meticulous visual control is not possible and irrigation must be employed. For the relatively inexpert majority irrigation must be the first choice, though this is not to say that dislodgment or partial breakdown of an impacted mass, before syringing, must not sometimes be cautiously effected.

Irrigation will continue to play a basic part in this procedure and any improvement in technics is therefore desirable.

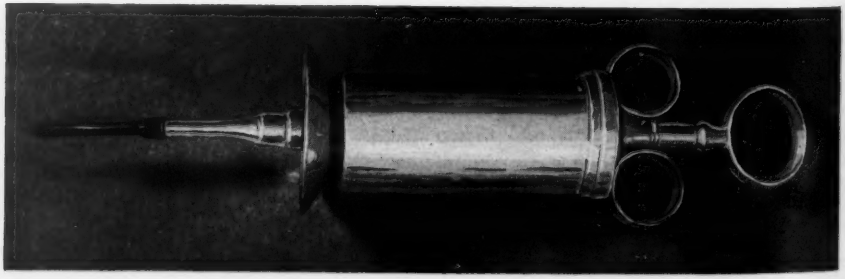
The method which is now presented for consideration is applied as follows:

The auricles are first drawn upward and backward by a simple device. Gentle traction suffices to displace the freely movable ears and no discomfort is caused by the slight compression of the tubing-covered device attached to each helix. This frees both hands, straightens the canal, and facilitates mechanically the intelligent direction of the irrigating solution. This device can be worn for any necessary length of time and its applicability to other otologic work is obvious.

In a good light, with the straightened canal before one, deep, safe and thorough cleansing of the aural canal is facilitated by the partial introduction of a short length of soft rubber catheter (12 French) affixed to the tip of a hand syringe (2 or 4 oz.). Upon its first introduction the round tip of the section of catheter may be slightly lubricated with an Irish moss jelly.

The intracanalicular freedom of the catheter permits gentle manipulation to where the streams of water will do the most good, in a non-traumatic manner not comparable with a rigid metallic tip.

It is not the force with which the successive volumes of water are propelled that determines the efficiency of the method so much as the by-passing strategy involved;

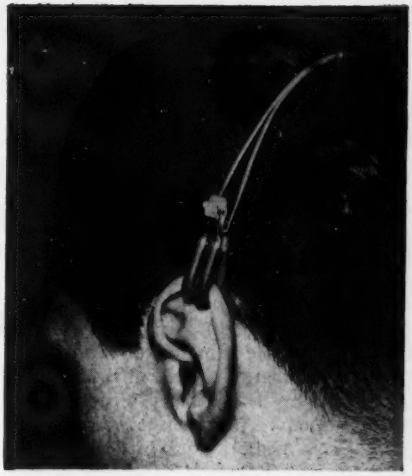


that is to say, the catheter tip itself can be passed to—not pushed against—the wax, finding its way, so to speak, to close and direct quarters with what is generally the optimum target—the upper part of the posterior wall where the tympanum is nearest the meatus and where the water can best insinuate itself between the wax and the canal until the plug is finally pushed out by the force of the water behind it.

Since the orifice of the catheter is on the side and not on the tip, the water emerges at an angle, striking the wall of the canal at any desired point. Generally, it is best to "aim" the orifice at the upper and posterior wall for the reason already cited; but this may be varied by rotation of the catheter so as to test all vulnerable points.

Hemacytometer pipet tubing is an alternative choice. If the cut-across ending of the tubing is beveled with a very small scissors its edge will not "bother" the lining of the canal. It has the advantage of being stiff enough to enter the canal as far as may be necessary but soft enough to crumple upon any direct impact; a disadvantage might be considered the marked lessening of force in the stream of water, although volume is increased; the larger lumen of the tubing as compared with the orifice of the syringe accounts for these effects.

Also to be taken into account is the employment of a 1 per cent solution of sodium chloride as the irrigating fluid, in accordance with the findings of Senturia and



Doubly (4), who have shown that such a solution rapidly disintegrates ear wax completely *in vitro,* action beginning immediately.

The simple procedure described converts an unpleasant and troublesome chore into an easy service.

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A. C. J.

MEDICINE AND THE AMERICAN ACADEMY OF GENERAL PRACTICE

—Continued from page 211

General Practice is doing this in a way that has been faultless, with unbelievable speed and accuracy. They are not exerting pressure on any group from within or without, they are not interested in such a pattern of procedure nor are they planning any such action. They are opposed to regimentation, to exclusion, to lack of recognition and to limitation of hospital privileges, which privileges rightfully belong to their members.

Their purpose is to elevate the standards of medicine and certainly not to oppose the efforts of the A.M.A., the Government or any scientific body in the establishment of adequate medical care for the American public. They are in conflict with no one, but are ready, willing and able to protect the individual rights of the general practitioner.

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EDITORIALS

One Forthright Publication

The *Journal of the Oklahoma State Medical Association* pulls no punches in its continued exposures of the Washington plot to advance compulsory sickness insurance. In its March 1948 issue it minces no words concerning "the den of skunks in the national capital." We should like to see more of this traditional American technic on the part of our medical press in dealing with such offensive mammals. The time is past for elegant exchanges with bureau-ensconced plotters.

Incidentally, we commend the Oklahoma Journal's series to the attention of the former Federal Bureau of Investigation agents who now publish *Counterattack* (a four-page weekly "Newsletter of Facts on Communism"), as the basis of an investigation by them looking to the real motivation of some of our bureaucrats. We feel certain that further data for a more militant medical press would be garnered by such an independent inquiry.

First Things First

According to Fairfield Osborn, eminent naturalist, the atomic bomb is not the worst thing to fear. It seems that we are rushing headlong toward the destruction of the world's *arable* land. In "Our Plundered Planet" (Little, Brown, New York) Osborn points out that such land amounts to about two acres per capita, whereas two and a half acres of average productivity are needed to supply our dietetic requirements. In other words, the 4,000,000,000 acres in cultivation are not now fully supplying 2,000,000,000 people.

With a prospective doubling of the world's population in the next seventy years and a continuation of the wrecking and accelerated erosion of the land that now goes on "civilization will be facing its final crisis." Half of the land of the United States has been ruined, with high-priced wheat a factor, which gives a certain insight into the bearing of the profit motive, when perverted, upon this problem.

We don't replace the animal and vegetable products that we take from their sources. Chemical fertilizers are not the answer, for it takes centuries to build an inch of topsoil from the materials that now go to waste; and there is less of such topsoil than we realize —only about a foot. The average depth in this country is eight inches. Yet this topsoil is the source of our food, clothing and shelter.

We have all sensed the irony in our life-saving and health-conserving achievements in medicine at the same time that we have devised dreadful agents, destructive of life on a vast scale. And now, when our knowledge of nutrition is approaching a high point, we are faced by a failure of the nutritional sources of life.

If we realized the truth about the world's arable land and the threat of the actual situation to mankind's continued existence—not to speak of our civilization —the nations would attend to first things first; and in so doing they would lessen the chances of war, which so often in the past has been a struggle of have-nots for arable land. The fear that vaguely grips some men's minds grows out of their depleted soil. Lack of understanding drives nations apart that should be partners when starvation threatens any one of them.

An Index of Degeneration

According to Maxence van der Meersch's novel, "Bodies and Souls" (Pellegrini and Cudahy, New York, 1948), France has done nothing but disintegrate since 1918. Among the evidences cited in the medical sphere are the common resort to abortion

and fee-splitting. Wholly unnecessary operations, motivated by the latter, are common in the France of this author.

The prevalence of fee-splitting is a good index of degeneration in any country. France does not hold a unique position in this respect.

Syphilologist and Genius

Fracastorius' understanding of the nature of syphilis was extraordinary. In addition to naming the disease he wrote passages marked by insight, like the following, in his *Syphilis, Sive Morbi Gallici, Libri Tres, ad Petrum Bembum* (Verona, 1530):

"The disease, in fact, does not show itself at once by accusing symptoms directly that it has penetrated the organism. For a certain time it broods in silence, as if it were gathering its forces for a more terrible explosion. . . That which is the most essential to a cure, is to surprise the disease at its inception, to strangle it in the form of a germ before it has time to invade the viscera."

There is a strangely modern ring about this. Does it not make one think at once of the present-day intensive method in early syphilis? This is further borne out as one reads of Fracastorius' 10-day method of head-to-foot mercurial inunction.

There is no chance in his reference to a germ, for he wrote a treatise *(De Contagione,* 1546) in which he states, with what Garrison calls "wonderful clairvoyance," the modern theory of infection by micro-organisms *(seminaria contagionum).*

Fracastorius described typhus fever and foot-and-mouth disease. He understood the significance of fossils and knew that the earth had magnetic poles.

A scientist of parts, indeed!

✚

THYROID DISTURBANCES

—Continued from page 196

ticle in MEDICAL TIMES. That is the effect of thyroid extract on capillary circulation. There have been papers published in the past to show that under the influence of thyroid extract or hyperthyroidism, there is a marked increase in the capillary circulation. Observations have been made on the nail cuticles and the number of open capillary loops is markedly increased when thyroid extract is given.

This observation, therefore, brings up the possibility that an increase in the capillary circulation is an excellent way of preventing one or more complications of aging. One of these complications is hypertension. It follows from purely hydrodynamic considerations that a large capillary bed circulation lowers the pressure in the deeper system. This is all that happens when an individual takes amyl nitrite or any of the other capillary-opening drugs. The fall in blood pressure is due to withdrawal of the blood from the deeper circulation into the immense capillary bed. The question is, then, does the administration of thyroid increase the capillary circulation to an extent where it causes a decreased general blood pressure? I feel that this is true because I have treated hypertensive patients with thyroid extract and found that the blood pressure does go down in some cases. This is not universally true, unfortunately. The blood pressure drop is not always due to loss of excess fatty tissue as some cases do not lose any weight at all, yet have a drop in blood pressure following thyroid extract administration.

It has been argued by many leading physiologists that one of the causes of aging of the tissues is a decrease in the capillary circulation. This is seen in such instances as the decrease in the circulation of the heart muscle, in the closure of the capillaries of the kidney, and the changes in the skin which have been accredited to decreased capillary circulation. It is interesting to theorize that if it is possible to continue a good capillary circulation, the aging effects might be avoided.

I think it is certainly worth while trying to prolong the time of life by the use of thyroid as no particular harm can come from a rational intake of thyroid extract.

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CONTEMPORARY PROGRESS

PHYSICAL THERAPY

Extremity Refrigeration Without Tourniquet Ligation in Cases of Acute Deficit

K. E. Livingston, Jr. *(Annals of Surgery,* 125:431, April 1947) reports a case in which refrigeration without tourniquet was used for twenty-eight days after acute occlusion of the popliteal artery and its branches. Cooling with ice bags was begun within four hours after the onset of symptoms of occlusion; only the foot to the level of the malleoli was covered with ice bags, with the purpose of cooling the tissues with the most severe vascular deficiency; later the area of cooling was extended to just above the ankle. The temperature was maintained at 13.5° to 16.5° C. While amputation (six inches below the knee) was finally necessary in this case, there was definite improvement in the appearance of the foot during the period of refrigeration, and regression of certain changes resulting from vascular occlusion that have been considered irreversible. Pathological examination of the extremity removed (gross and microscopic) showed that revascularization was taking place in the tissues that had been cooled; and that the nutrition of the deep muscles, the weight-bearing skin and subcutaneous tissue of the foot had been maintained. There were many small patent blood vessels in all the tissues and no evidence that the cold had caused a shutting down of the smaller circulation by vasoconstriction. In another case of this type, the author would make certain changes in the management. Especially, he considers that refrigeration should be applied to the entire limb from the knee downward; this might have prevented the development of edema in the calf muscles, which undoubtedly interfered with circulation to the distal limb, while it persisted. Also alcohol block or lumbar sympathetic ganglionectomy might be done on the affected side to insure "maximal" delivery of blood to the affected area.

COMMENT

From the growing literature on Refrigeration Anaesthesia, experience shows that living tissue may be maintained in a state of suspended animation at temperatures slightly above freezing, actually from 0.5 to 5.0 C., for days, weeks or months. Experience also shows that in the case of the lower extremity, it is necessary to include, not alone the foot and leg, but that the ice, the ice bag, or the icy temperature from the electric refrigerator must be applied high on the thigh. The idea is to reduce metabolism, relieve pain, prevent infection or its extension or absorption, if present, to prevent or limit gangrene and to prevent shock. Oedema is also thus prevented with its asphyxia of the distal tissues.

Refrigeration applied immediately following injury will save severe, prolonged illness, amputation and maybe, lives. It will permit of transportation to hospital or other surgical center, where further treatment is available.

Where amputation has to be done, refrigeration anaesthesia, with or without tourniquet, will markedly reduce morbidity and mortality, if carried out as laid down by those who have made all methods a matter of deep study.

Relative to vascular accidents and their immediate treatment, it has been recommended to have available in each hospital a vascular team trained in methods of vascular anastomosis, to call upon at any time for the management of a major arterial injury. A Subcommittee on Vascular Trauma, available for consultation with any such vascular team, has been appointed by the New York and Brooklyn Regional Committee on Fractures and Trauma, American College of Surgeons.

M.C.L.McG.

The Effect of Elevated Body Temperature on the Cardiovascular System

G. X. Schwemlein *(Archives of Physical Therapy* 28:165, March 1947) reports a

study of the effect of fever therapy with the Kettering hypertherm on the cardiovascular system. Every patient given this form of fever therapy was prepared for the treatment by a high vitamin, high caloric diet for two days, combined with the administration of desiccated whole bile salts and sodium chloride (in enteric coated tablets) three times daily after meals; and a low soapsuds enema and the administration of phenobarbital the night before fever therapy. Each patient in the series studied received a three to eight hour treatment at the 106° F. level. It has been found that the state of hydration during fever therapy can best be followed by determination at intervals of the plasma specific gravity by a modification of the method described by Kagan in 1938. It was found that when the plasma specific gravity was within normal limits, the patient was comfortable during the treatment, the pulse rate was stabilized at 100 to 120 beats per minute, and the arterial blood pressure stabilized at the pre-treatment level. This method of determining the state of water balance and controlling it when necessary has proved of great value in the administration of fever therapy for normalizing pulse rate and volume and arterial blood pressure. In 40 patients given fever therapy with water balance control, electrocardiographic studies were made. In none of the cases were the changes in the limb leads observed, such as are described by others during physically induced therapy. In 8 of the 40 patients, the electrocardiogram showed temporary changes in the T wave in one or more of the four chest leads employed, varying from blunting to actual inversion of the T waves. None of these patients showed signs of coronary insufficiency or circulatory collapse during treatment.

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Comment

Fever Therapy is one of the most effective but also one of the most dangerous modes of procedure. In skilled hands, in a hospital, with an experienced team of physician and nurse and cooperation from the staff, morbidity and mortality should be nil. A bout of hyperthermy of five or six hours at 105 to 106° Fahrenheit is equal to two major operations; where ten or more hours are given, the effect is equal to double that number, in tension, worry, stress and strain.

Adequate preparation is just as essential as is preoperative or prepartum care, to prevent any accident. As physiologic adjustment to induced hyperthermy depends on proper functioning of the vascular system, the sweat glands and the thermoregulating center, it is essential to select suitable cases and to prepare them for the ordeal. Dehydration, anoxia and alkalosis are especially to be guarded against.

In the early days it was thought that a light supper and no breakfast would prevent nausea and vomiting, but we soon found that a light breakfast prevented the feeling of weakness and emptiness so frequently complained of. As there is little or no absorption of the liquids given after the induction of fever, dehydration will ensue if the body be lacking in sufficient stored liquid to maintain an adequate water balance, thus preventing trouble. It is our custom to stress to the patients the importance of a high caloric, high vitamin diet, fruits, vegetables, salt foods and desserts of all kinds; where salt was not liked, the regular salt and dextrose tablets were

given. Gelatine is excellent for holding water and is usually relished. Where possible, preparations should be begun one week before the initial treatment and continued through the series; 3 to 6 or more pounds were added on this diet and lost after the fever session.

Proper selection of cases, adequate preparation, constant supervision and gradual reduction of hyperthermy are all required for a successful outcome.

Since the advent of the sulfa drugs and penicillin, physically induced hyperthermy is now usually reserved for cases resistant to these chemicals. *M.C.L.McG.*

Physical Therapy in the Treatment of Arthritis

L. M. Lockie and E. Musgrove *(New York State Journal of Medicine,* 47:851, April 15, 1947) describe a program of physical therapy for patients with arthritis. Patients with rheumatoid or severe osteoarthritis are hospitalized for two to four weeks as a rule. The patient must be prepared psychologically for the treatment, and its purpose and principles explained to him. Adequate bed rest is essential in all cases of arthritis; the bed must be hard and flat; the patient lies supine with arms parallel to the body; the feet are supported against a padded footboard or a pillow with the heels dropped over the edge of the mattress. Small flat sandbags may be used to maintain extension of wrists and fingers, larger sandbags to prevent outward rotation of the hips. Frequent changes of posture are permitted for short periods; and a sitting position with knees extended is maintained for one-half hour three times a day at meal time. A special course of breathing exercises is carried out regularly through the day, as well as trunk exercises, with alternating periods of rest. The "technic of relaxation" is also taught the patient. Heat therapy is used in all cases, applied to all painful areas. The heat must be mild and even; the infrared lamp has been found to be a satisfactory source of heat in many cases of arthritis. Shortwave diathermy is used for the spine, for the larger joints and sometimes for the hands, but always with low intensity. Paraffin baths may be used for the hands; hot packs are also of value for the treatment of painful tissues. A Hubbard tank, when available, is of value in the treatment of arthritis as all joints may be treated simultaneously, and active exercises can be performed with a minimum of discomfort. A whirlpool bath is not indicated in the treatment of rheumatoid or osteoarthritis, in the authors' opinion. Ultraviolet light may be given in mild tonic doses to improve the general well-being. Massage is of value if done by a skilled technician; it should follow the application of heat and precede exercise. The purpose of massage in arthritis is chiefly to increase the blood supply; massage of the affected joints consists in effleurage followed by light, firm, rhythmic stroking; petrissage massage may be used for the tissues around the joint but not over the joint itself. Exercises, carefully graded to the patient's capacity, include passive exercises performed by the operator, assistive active exercises in which the operator assists the patient, and active exercises performed by the patient without assistance, but under supervision. In the transition from bed rest to sitting, standing and weight bearing, the program of organized exercises is continued, with special attention to developing correct posture and proper balance. In some cases some form of support, such as crutches or a walker, may be necessary, but such supports should be discarded as soon as possible, and the patient trained to walk without them. Occupational and recreational therapies are also an important part of the program. The program must be continued at home, usually with the aid of some member of the family who has been instructed in the necessary details during the period of hospital treatment. Rest must still be adequate; heat treatments are given with an infra-red lamp, maintaining a mild heat. The exercise routine is planned to meet the needs of the new environment, and occupational therapy is continued. The patient is under careful supervision and changes are made in the program as his condition improves.

Comment

Physical medicine has a most important

field in the treatment of arthritis and allied conditions. It is an excellent adjuvant to all other measures in the whole treatment of the patient.

The physiatrist (specialist in physical medicine) should be called early for the proper conduct of the case. Four measures should be stressed: Rest, the gentlest heat, the gentlest of massage with appropriate exercises (respiratory, general, local, active, passive), relaxation, proper posture and body mechanics, are necessary for eventual recovery and reconditioning.

Too great heat will increase pain in the acute stage. Too strenuous massage will do likewise. Affected joints must be handled, if at all, with extreme gentleness or there may be a severe flare-up. Exercise, done by the patient himself, known as active exercise, will be most effective in improving his condition and preventing deformities. If given under water, exercse will be most enjoyable and will materially shorten convalescence.

The warm whirlpool bath, local or general, we have found to be of greatest service. The warmth and the swirling water give heat, massage and exercise at the same time. One cannot remain still in the whirlpool and the patient is encouraged to move as in no other medium.

The orthopaedist may be needed to apply splints where contracture is threatened and a fracture bed will help greatly to maintain proper posture. All splints and supports must be removable so that a complete range of motion may be carried out at least thrice daily, after the warm bath, local or general heat and massage.

Fatigue must be avoided at all cost. Rest is needed frequently to recover from exertion. *Occupational therapy is excellent for stimulating interest, coordinating brain and hand power and preventing stiffness and atrophy of idle muscles.*

"Make haste slowly" is the motto for a successful outcome. Each case is individual and treatment must be gauged by the patient's ability to respond to the measures employed.

M.C.L.McG.

Rehibilitation of Patients With Spinal Cord Injuries

L. B. Newman *(Archives of Physical Therapy,* 28:85, Feb. 1947) outlines briefly the plan of the Veterans Administration for the rehabilitation of patients with spinal cord injuries. Many services are necessary to carry out this plan. The Physical Medicine Service has an important role as it includes physical therapy, occupational therapy, and corrective physical rehabilitation. A thorough evaluation of the physical condition of the patient is made, including motor and sensory nerve tests and muscle tests. Various forms of physical therapy are employed. Patients with decubitus ulcer are treated in the Hubbard tank, followed by drying of the ulcer with an ordinary electric hair dryer and ultraviolet irradiation of the ulcer; various other methods of treatment, such as penicillin packs or penicillin by ion transfer, may be employed. One of the most important functions of the Physical Medicine Service is the work of corrective physical rehabilitation in preparing the patient to be ambulatory and normally active. Exercises to maintain muscle tone and prevent contractures are begun early, while the patient is still confined to bed. Completely equipped therapeutic exercise rooms are necessary to teach these patients body balance and to train them in the use of crutches and braces, which such patients may need to use all their lives, but which will enable them to walk. Swimming and under water exercises are of much value. Patients are taught to drive automobiles that are entirely hand controlled; and are given prevocational shop training as a part of physical rehabilitation. All the physical medicine methods are part and an important part of the program that aids the patient with spinal cord injury to return to normal activity and work.

Comment

In the First World War most patients with spinal injury did not survive. There were not then the facilities for close cooperation of all branches of medicine and surgery to start the patient on the road to recovery, however limited.

In World War II rehabilitation started with the first aid rendered the injured man and every medical service took a hand in his treatment. Physical medicine was begun at once in the line of physical therapy, occupational therapy and corrective physical rehabilitation and continued (or is being continued) until he became a useful member of society once again—no longer a charge against society, but an independent personality.

Early recovery depends on how well the team work of all physicians, nurses, attendants and the patient himself is carried out. Begun early, muscles will retain their tone and

be in good condition when nerves are ready and able to take over. Delayed by anyone, irreversible lesions develop and rehabilitation becomes eventually a series of all-day treatment, with time-consuming methods and expensive machines that can never give much release from disability, to the unhappiness of the patient, the physician and the long-suffering public, the tax-payers who foot all bills. The patient is the most important worker on the team and, if he will not cooperate, all will be lost. There were 2,500 paraplegics at the close of the War; most have responded very well to the regimen laid down for them and are again aiming to take (or have taken) their places in a shattered world. M.C.L.McG.

PUBLIC HEALTH, INDUSTRIAL MEDICINE AND SOCIAL HYGIENE

An Outbreak of Smallpox In New York City

Israel Weinstein *(American Journal of Public Health,* 37:1376, Nov. 1947) describes the outbreak of smallpox that occurred in New York City in the early part of 1947. The first case occurred in a merchant coming from Mexico to New York; although not feeling well when he arrived in the City, he did not go to the hospital for several days, and did not develop a rash until the fourth day of hospitalization, when he was transferred to Willard Parker Hospital, where he died before the diagnosis of smallpox was made. Other patients who had been at the Willard Parker Hospital, the wife of one of them, and 3 men who had been patients at Bellevue Hospital where the first case had been admitted, developed smallpox. As soon as the diagnosis of smallpox was established in the second case, the history of the first case was carefully reviewed and the diagnosis of smallpox established. All employees and patients at Willard Parker Hospital and all known contacts with the first 3 patients were vaccinated. At the same time a campaign for vaccination of all persons in New York City was begun. Large supplies of vaccine were obtained by the Health Department and vaccination stations were set up in all police precincts, Health Department buildings, municipal hospitals and clinics. Stations were also established by community organizations, in factories and offices, and in union headquarters. In a period of less than a month over 6,500,000 persons in the City were vaccinated, over 5,000,000 in the two week period after the appeal for universal vaccination had been issued by the Mayor. In this way a major outbreak of smallpox in New York City was prevented; only 12 cases of smallpox occurred, 9 originating in New York City and 3 in Milbrook, N. Y. (contacts with a patient from Willard Parker Hospital in a convalescent home). There were 2 deaths in the 9 cases originating in New York City. Of the 12 patients who developed smallpox only 3 had been vaccinated, and that many years previously. The length of time that immunity lasts after vaccination varies in different individuals. Many persons who had been vaccinated only a few years previously, had accelerated reactions, and some primary takes when re-vaccinated during the vaccination campaign. There were no proved cases of post-vaccination encephalitis among vaccinated persons in New York. There were 3 deaths due to other complications, one due to septicemia following an infection of the vaccination, and 2 due to generalized vaccinia in infants who had eczema. If vaccination had not been carried out on a large scale, however, there would probably have been thousands of cases of smallpox with hundreds of deaths. The experience of New York City clearly shows that when a case of smallpox occurs in a community "universal vaccination is the only safeguard."

COMMENT

Readers of Dr. Weinstein's paper may be interested in the effect of the outbreak of smallpox in New York City upon its close

neighbor—Nassau County. It is estimated that more than 100,000 persons commute daily by railroad, bus, or private automobile to their places of employment in New York City. It is, therefore, conceivable that the danger of introducing virulent smallpox into Nassau County was imminent. Immediate vaccination was ordered of 52 persons who were known to have resided at the hotel simultaneously with the original case, and of a chauffeur who had been in contact with one of the three cases in Milbrook, N. Y.

Vaccination clinics were organized by the Nassau County Department of Health at which over 57,000 persons received protection and an additional 47,000 residents were reported vaccinated by private physicians. There is also the additional unknown number of persons vaccinated by physicians who, due to pressure of work, have failed to report them to the department of health. It is estimated that in a period of less than a month, from 25 to 30 per cent or more of the population of the community was vaccinated. E.G.B.

Evaluation of California's Prenatal Law Requiring a Serologic Test for Syphilis

A. F. Brewer and F. E. Olson *(American Journal of Syphilis,* 31:633, Nov. 1947) state that the California Prenatal Law requires that a blood specimen be obtained from a pregnant or recently delivered woman within ten days after her first visit to a physician, and that this specimen be submitted to a laboratory approved by the California State Department of Public Health for serologic test for syphilis and that results are to be reported to the State Laboratory. This law went into effect in September 1939 at a time when venereal disease case-finding activities were being expanded in the State. The number of deaths in infants under one year of age due to syphilis in California decreased from 1938 to 1941, the rate being cut to less than one-half that of 1938; there was another decrease in the infant death rate due to syphilis from 1942 to 1945. The incidence of congenital syphilis in infants under one year of age (per 1000 live births) was also significantly lower in 1941 through 1945 than in 1938 and 1939 before the law went into effect and in 1940, the first year under the law, but there was a slight rise in incidence in 1944 and 1945 as compared with 1942 and 1943. Although the prenatal law provides a means of making a diagnosis of syphilis in pregnant women, there are a number of factors that affect its efficiency as a method of eliminating congenital syphilis among infants. One of these factors is the period of gestation at which the test is made; statistics for 176,988 live births in the State in 1944 show that no tests had been made in 3,009 cases; in 1,252 cases the test was made after delivery; and in 27,149 cases after the second trimester of pregnancy. Thus late treatment or no treatment during pregnancy for infected women in these groups would account for some cases of congenital syphilis. Another factor in California was the sudden increase in population during the war years due to migration of workers to war production plants; and relatively greater increase in Negroes, among whom congenital syphilis showed a much higher incidence than among the white population.

Comment

The over-all picture is good, but the California prenatal law allows the physician or other person immunity from a misdeameanor charge when the patient elects not to have the blood examination done. This is a weak point in the law, which could be quoted in the evaluation. The progressive decreased incidence of congenital syphilis and in the death rate as the program developed augured well for the basic points of the program. Also commendable was only a slightly increased incidence of congenital syphilis during the war years of 1944 and 1945. Probably making the law mandatory that a blood specimen be taken could have further decreased the incidence of congenital syphilis. California has an excellent point in including cently delivered women in its program, thus increasing the yield as a case-finding project and forestalling missed congenital cases by adequate follow-up of infants of infected mothers. E.G.B.

The Treatment of Decompression Sickness

O. E. Van Der Aue, G. J. Duffner and A. R. Behnke *(Journal of Industrial Hygiene and Toxicology,* 29:359, Nov. 1947) report 113 cases of decompression sickness treated by methods developed by the Ex-

perimental Diving Unit, U. S. Naval Gun Factory and the Naval Medical Research Institute. The most common symptom observed in these cases was localized pain ("bends") which involved the upper extremities more frequently than the lower extremities. Twenty-nine patients had symptoms referable to the central nervous system. Symptoms were relieved in 36 cases by recompression to pressures less that the equivalent of a diving depth of 33feet; 28 by pressures equivalent to depths of 34 to 66 feet; and 20 by pressures equivalent to depths of 67 to 164 feet. Twenty-nine patients required a pressure equivalent to 165 feet for relief; 20 were relieved immediately when this pressure was reached, but 9 required decompression periods of five to seventy-two minutes at this pressure. *The amount of pressure required was related directly to the time elapsing between the onset of the symptoms and the beginning of treatment.* In 75 cases oxygen inhalation was employed at pressure levels equivalent to 60 feet or less; 4 of these patients developed symptoms of oxygen toxicity, which were mild in 3 cases but terminated in a convulsion in one case. These symptoms were relieved by stopping the administration of oxygen. In 109 cases the treatment employed was successful in relieving the symptoms completely; only 4 patients developed recurrences and required subsequent recompression.

COMMENT

These are excellent results and the findings should be duplicated under actual working conditions. The authors fail to include the relationship, if any, between time under what pressures and the amount of decompressoion necessary to control symptoms. The increased solubility of nitrogen under high pressures and subsequent rapid release with the onset of symptoms, especially in fatty individuals, seem to have a bearing on this problem, in addition to the time elapsing between onset of symptoms and the beginning of treatment.

E.G.B.

Practical Experience with Dangers and Illness from Plastics

C. S. McKinley *(Industrial Medicine,* 16:432, Sept. 1947) stated that in his experience as medical director of a plant manufacturing plastics he has found that the health hazards in this industry are not of "an extreme nature." Many raw materials are used in the manufacture of plastics; some of them have been used in industry for many years and their toxicity and methods of protecting workers against them are well known. But new materials are constantly being introduced into large scale manufacture and their possible health hazards must be studied. Such new chemicals must be tested by a range finding test, and their effects closely watched by proper medical examinations of the workers in contact with them, until their toxicology can be evaluated. In the manufacture of plastics, good general ventilation is sufficient to protect the workers in many operations. In some operations, such as hot molds and ovens, hood and local exhaust ventilation may be necessary. While the hazard of systemic intoxication in the manufacture of plastics is relatively slight in the author's experience, dermatitis is of frequent occurrence. While some of the chemicals employed are primary skin irritants, dermatitis is not usually due to this type of skin irritation; sensitization dermatitis is much more common. When this form of dermatitis is of mild type, an "immunity" (i.e., a decrease in sensitivity) can be built up, so that the worker can continue to use the materials. As the dermatitis in the manufacture of plastics is often due to exposure to dusts and vapors, good general ventilation with special types of ventilation for certain processes, as mentioned above, decreases exposure and "dosage" of the sensitizing substance, and this lowers the incidence of dermatitis. When dermatitis is due to direct contact with some chemical, frequent cleaning of working equipment, personal cleanliness of the workers (with provision for showers and change of clothing) reduce the exposure. In some cases, protective equipment such as gloves or aprons may be used. Protective creams are sometimes useful, if workers do not "substitute the cream for cleanliness." The best methods of removing different chemicals from the skin must be known and employed. The

author has found that for the removal of insoluble dyes a mixture of cotton seed or corn oil, isopropanol and green soap is most effective.

COMMENT

The author states that the health hazards in the plastic industry are not of an "extreme nature," since the raw materials used in the manufacture of plastics are generally well known, having been used for many years in industry. He further states that they are constantly introducing new raw materials into large scale manufacture of which the possible health hazards are not known. These statements seem contradictory, since certainly, vigilance must be shown in the possibility of toxic substances being introduced at any time into a new phase of plastic manufacture. He mentions that general ventilation is sufficient to protect the workers in many operations. This is in contrast with what is generally accepted by industrial hygienists as the ideal method of removing a toxic substance from the atmosphere. Local exhaust ventilation has proved the accepted and most general method of removing the toxic substance from the breathing zone of the worker. Also, the author does not mention the use of properly designed respirators by the workers where no other means of control is available.

The methods of control of dermatitis in the manufacture of plastics due to direct contact with the chemical are well stressed, placing emphasis on the personal cleanliness of the workers and the proper use of protective creams. ***E.G.B.***

An Evaluation of the Use of BCG in the Prevention of Tuberculosis In Children

M. I. Levine *(American Journal of Public Health,* 37:1089, Sept. 1947) presents a review of the results of over 5,000,000 BCG inoculations, including the use of this vaccine in New York and Chicago. This review shows that BCG is entirely safe. While the results obtained as reported are scientifically and statistically inconclusive, the fact that the reports are favorable indicates that the vaccine has some degree of efficacy. Further studies of BCG are indicated to determine the degree of its effectiveness, with special consideration of racial differences, and the use of different culture media in the preparation of the vaccine. Such studies should also include the significance of the tuberculin reaction following BCG inoculation; the duration of the immunity and the possible need for re-inoculation. Such research is necessary before BCG vaccination can be accepted as a general public health measure.

COMMENT

Harmlessness of BCG has been established beyond doubt but minute control and constant supervision must be demanded of the laboratory that prepares the vaccine. New York State is the first to develop plans for the production and use of BCG under the direction of Dr. Konrad Birkhaug working under Dr. Gilbert Dalldorf, Director of the Division of Laboratories and Research of the New York State Department of Health.

Although reports indicate that the number of cases of tuberculosis and of deaths from this disease is considerably smaller among vaccinated persons than among those not vaccinated, BCG should not be considered a substitute for prompt and adequate segregation of infectious cases of tuberculosis. More research is necessary to determine the lasting effect of this safe method of vaccination. ***E.G.B.***

PEDIATRICS

Oral Penicillin in the Prophylaxis of Recurrent Rheumatic Fever

M. M. Malinar and S. D. Amsterdam *(Journal of Pediatrics,* 31:658, Dec. 1947) report a study of 44 children at the Pediatric Cardiac Clinic of the New York Post-Graduate Hospital during the fall, winter and spring seasons of 1945 to 1946 and 1946 to 1947. Twenty-two of these children were given penicillin troches for the purpose of preventing upper respiratory tract infections and recurrent attacks of rheumatic fever. The troches used during the first season contained 1,000 units of penicillin each; those used during the second season, 5,000 units

each. The children were instructed to suck one troche slowly about an hour after each meal. The other 22 children in the series were used as controls without penicillin. All children reported to the Clinic monthly for a checkup. Fifteen of the mothers of the 22 children receiving penicillin reported that the general health of their children was definitely better and that they had fewer and less severe respiratory tract infections. Three of the 22 children had frequent colds during both seasons. None of 22 children showed any signs of rheumatic activity during the period of observation, but 4 of the 22 children in the control group developed definite attacks of rheumatic fever. These results indicate that penicillin is not "a panacea" for prophylaxis of the common cold, but that it is of value in the prophylaxis of recurrent attacks of rheumatic fever; and that its use for this purpose requires further trial and study. The use of penicillin troches for rheumatic fever prophylaxis, if equally effective, has definite advantages over the sulfa drugs, as penicillin is definitely less toxic. The penicillin troches are designed to act directly upon the focus of infection in the respiratory tract, not to maintain a definite blood level. Frequent blood counts and urinalyses are not required, as with the prophylactic use of the sulfa drugs.

COMMENT

The number of cases reported is insufficient to draw definite conclusions. The fact that the children taking the penicillin showed an improvement in general health could certainly have had nothing to do with the penicillin. In such an experiment larger doses might be given to prevent the development of the streptococcus in the throat. Certainly such local treatment of the throat could have no influence upon the development of the common cold, which is primarily a rhinitis. Such treatment, however, deserves a trial.

H.E.U.

Megaloblastic Anemia in Infants

R. A. Aldrich and E. N. Nelson (*Journal-Lancet*, 67:399, Nov. 1947) report 6 cases of megaloblastic anemia in infants six to nine months of age, seen in eight months. The degree of anemia was marked in all these infants, with macrocytosis, anisocytosis, poikilocytosis, polychromasia and hypochromasia. Pernicious anemia-like neutrophils were present in the blood in all cases, and there was a definite leukopenia in 2 cases; and marked thrombopenia in 5 cases. In all of these infants the diet had consisted entirely or almost entirely of a synthetic milk product which contains vitamins A and D and the chief members of the B complex, but no vitamin C. Some of the infants had been given orange juice, but none had received an adequate amount of vitamin C. Frank scurvy was present in 3 cases, and equivocal signs of scurvy in several others. Examination of the bone marrow showed characteristic hyperplasia, depression of platelets, and abnormal polymorphonuclear neutrophiles. These infants had appeared well for three or four months; the first symptom was anorexia, which became increasingly severe, so that the infant failed to gain or even lost weight; then pallor, decrease in vigor, and irritability when handled developed. In all cases the anemia was promptly relieved by intramuscular injections of a refined liver extract potent in anti-pernicious anemia principle. When the anemia was cured and the bone marrow became normal there was no relapse when liver therapy was stopped. In 2 cases anti-scorbutic therapy alone had no effect on the reticulocyte count; and the 3 infants with scurvy did not respond well to vitamin C until liver extract was given. The fact that 6 cases of this type of megaloblastic anemia of infants were discovered in eight months at one clinic indicates that physicians must be alert to recognize and treat this type of anemia. While it is generally recognized that faulty nutrition is an important etiologic factor, the specific defect in nutrition that causes megaloblastic anemia in infants has not yet been determined.

COMMENT

Spies and his associates have recommended synthetic folic acid in daily doses of 10 to 20 mg. or liver concentrate in the treatment of macrocytic anaemia. Folic acid is particularly valuable in cases presenting liver sensitivity. Both may be used together but liver concen-

trate is recommended for constancy and speed of action. *H.E.U.*

Phthalylsulfathiasole in the Treatment of Diarrhea in Children

M. L. Blatt, E. B. Plattner and associates at the Cook County Hospital, Chicago *(Journal of Pediatrics,* 31:548, Nov. 1947) report the use of phthalylsulfathiazole, sulfathiazole and kaopectate in 121 children admitted to the Hospital with a history of abnormally frequent and liquid stools. In 98 of these children, the diagnosis of diarrhea was established; in the remaining 23 children, less than three stools were passed in the first twenty-four hours after admission. These 23 children were treated with the same drugs as the diarrheal group, but are not included in the statistical analysis of results. There was no statistically significant difference between the results with phthalylsulfathiazole and with sulfathiazole in the treatment of diarrheas in children. Both were more effective in the treatment of children over twelve months of age, than in those under twelve months of age. Phthalylsulfathiazole was more effective in diarrhea due to specific organisms. Sulfathiazole was also somewhat more effective in diarrheas due to specific organisms, but the difference between results in specific and nonspecific cases was not significant with this drug. Sulfathiazole appeared to shorten the course of the disease in all groups somewhat more than phthalylsulfathiazole, but as noted above, this difference was not statistically significant. Either drug alone was more effective than a combination of the two, or than a combination of either with kaopectate. In the determination of sulfonamide blood content, it was found that very little phthalylsulfathiazole was absorbed as compared with sulfathiazole. No toxic symptoms were observed with any of the drugs used. Three children under twelve months of age died; no specific organisms had been found in their stools; autopsy showed no evidence of any ill effects of the drugs used in treatment (phthalylsulfathiazole and sulfathiazole with kaopectate in 2 cases).

COMMENT

The form of sulfonamide employed in the treatment of diarrhea is unimportant. Twenty years ago when milk given to babies was of poor quality infection of the intestinal tract followed the ingestion of such milk. Today nearly all intestinal upsets of an acute nature follow a primary throat infection. In all cases of diarrhea the treatment of the throat condition is of prime importance; the treatment of the intestinal condition is neecssary but the throat and nose as the focus of infection should not be forgotten. *H.E.U.*

Penicillin in Treatment of Empyema in Children

G. E. Prince and W. J. Temple *(American Journal of Disease of Children,* 74: 447, Oct. 1947) report 9 cases of empyema in children treated with penicillin; the ages of the patients ranged from five weeks to five years. In all but one case aspiration and instillation of penicillin into the pleural cavity were employed, supplemented by intramuscular administration of penicillin. In one case, cure was obtained by intramuscular injection of penicillin and aspiration of purulent material from the pleural cavity without intrapleural instillation of penicillin. In the infant (five weeks of age) a small dosage of penicillin was effective, 2,500 units intramuscularly every three hours and two intrapleural injections of 10,000 units each. In older children a larger dosage was employed, 15,000 to 20,000 units intramuscularly every three hours, and intrapleural instillations of 30,000 to 50,000 units in 10cc. of isotonic sodium chloride solution. In most cases at least four instillations of penicillin were given and in one case eight instillations. The pleural cavity was not irrigated with the solution in any case. All but 3 of the patients responded favorably to the therapy within one week, and were cured without surgical drainage; none developed chronic empyema. The 3 patients who failed to respond to the penicillin therapy and were treated surgically had complications that may explain the failure of the penicillin therapy. Two had pneumothorax with bronchial fistula, and one of these 2 patients also had bands and clots of fibrin that could not be aspirated through a needle. The third patient

also had fibrin clots and thick purulent fluid in the pleural cavity. It is possible also that some of the organisms causing the infection may not have been sensitive to penicillin. *Staphylococcus aureus* was found to be the causative agent in 4 of the 9 cases and the pneumococcus in 2 cases; in 2 cases no organism could be cultured in the fluid aspirated; in one case requiring surgical drainage, *H. influenzae* was found after operation but was not considered to be the primary etiologic agent.

COMMENT

Empyema is no longer a common disease for penicillin and sulfonamides used in the treatment of pneumonia prevent this complication. Penicillin is the agent commonly employed with success in the treatment of empyema. Few severe epidemics of a streptococcus infection have appeared since the advent of penicillin. Should we be beset with such an epidemic penicillin will receive its real test. ***H.E.U.***

A New Treatment for Diaper Rash

R. A. Benson and associates at New York Medical College, Flower and Fifth Avenue Hospitals (*Journal of Pediatrics,* 31:369, Oct. 1947), report the use of a quarternary ammonium compound in the treatment of diaper rash. This compound (para di-isodontyl-cresoxy-ethoxy-ethyl dimethyl benzyl ammonium chloride monohydrate, trade name Diapene) has been found to be a safe and effective bactericide against *Bacillus ammoniagenes.* In *in vitro* tests inhibition of the growth of this bacillus was demonstrated with dilutions of Diapene up to 1:110,000. Skin (patch) tests with Diapene, first on adults and then on children and infants, showed no reaction. Diapene was then used in the treatment of 50 children with diaper rash showing moderately severe to severe lesions. The treatment consisted in impregnating all diapers with Diapene, which was supplied in the form of tablets. One tablet in 2 quarts of water gave a solution of approximately 1:25,000; as many as six washed diapers were placed in a basin and the solution poured over them; after soaking for ten minutes, the diapers were wrung out and hung up to dry. Of the 50 infants treated with the diapers, 18 showed complete clearance of the dermatitis in three days; and all but one of the remainder complete clearance in seven days. One infant did not respond to the treatment. In resistant cases a stronger solution of the Diapene might be used without danger of skin irritation. Fourteen of the infants treated showed a mild recurrence of the dermatitis two to four weeks after stopping treatment. In every case this recurrence was promptly cleared by the use of Diapene-impregnated diapers. In the treatment of ammonia dermatitis, all the diapers used should be impregnated with Diapene, but for prophylaxis, it may be that only the night diapers need to be impregnated.

COMMENT

Ammonia dermatitis is a common condition in infancy. It appears in waves of from 10 to 14 days. Most cases can be cured by rubbing into the diaper at bedtime four to six teaspoons of boric acid powder. Enough boric acid powder must be used to eliminate the odor of ammonia in the morning. The dermatitis can then be cured by exposing the buttocks to the air for one half hour morning and afternoon. The application of boric acid ointment at night will protect the buttocks from the irritating urine. Mothers prefer the simplest form of treatment for the ailments of their infants, hence the suggestion. A fresh diaper should be used at the parents' bedtime. ***H.E.U.***

THYROID DISTURBANCES

—Concluded from page 215

As you can see, there is very little except theory in the back of this idea of mine, but I do feel that something should be done about it as it seems to work in many cases. I would be very interested to know if the author of your article ran across references on any angle of this idea. If so, I would appreciate greatly a list of the references for my own files.

Again let me thank you for sending MEDICAL TIMES. I read it frequently and have enjoyed it.

D. OLAN MEEKER, M.D.
New York, N. Y.

Medical BOOK NEWS

Edited by
ANDREW M. BABEY, M.D.
All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn 16, N. Y. When books are sent to us with requests for review, selections for that purpose are promptly made.

WILLIAM SMELLIE
1697 ~ 1763

Classical Quotations

● **Let the operator acquire an accurate knowledge of the figure, shape, and dimensions of the Pelvis, together with the shape, size and position of the child's head.**

WILLIAM SMELLIE

Rules for using the Forceps.
***Midwifery*, London, 1779, Vol. 1, page 243.**

Cell Physiology

Physical Chemistry of Cells and Tissues. By Rudolf Höber, M.D. With the collaboration of David I. Hitchcock, J. B. Bateman, David R. Goddard & Wallace O. Fenn. Philadelphia, The Blakiston Co., [c. 1945]. 8vo. 676 pages, illustrated. Cloth, $9.00.

Dr. Höber, in his preface, writes "The subject of the book is physiology; not 'physiology from above' but 'physiology from below'; not physiology originated essentially to fill human needs and help suffering individuals, but physiology as a branch of physical chemical science dealing with life as a physical, though exceedingly complex, system, that may be subjected to scientific analysis like any other natural object."

For the advanced students and investigators interested in the application of physical chemistry to biological systems, this volume is indispensable.

A. R. KANTROWITZ

Reparative Surgery

Rhinoplasty and Restoration of Facial Contour. With Special Reference to Trauma. By Jacques W. Maliniac, M.D. Philadelphia, F. A. Davis Co., [c. 1947]. 8vo. 327 pages, illustrated. Cloth, $7.50.

This nicely printed book covers in detail the multitude of accidental and surgical traumas requiring rhinoplasty not so thoroughly covered in other publications. Much space is devoted to fractures and the associated contour deformities which do not always receive the attention they deserve. The chapter on skin grafts is more or less standard but good. A special chapter on X-ray Diagnosis of Nasal and Paranasal Injuries by Henry K. Taylor, M.D., is excellent. Altogether it is a very fine volume for any plastic surgeon to have in his library.

THOMAS B. WOOD

Proteins

The Preservation of Proteins by Drying. With Special Reference to the Production of Dried Human Serum and Plasma for Transfusion. By R. I. N. Greaves. London, His Majesty's Stationery Office, (New York, British Information Services) [c. 1946]. 8vo. 54 pages, and 21 pages of plates. Paper, 60c. (Medical Research Council, Special Report Series #258).

This publication of the British Medical Research Council deals with the development of wartime methods for preparing blood derivatives. It outlines the various steps leading to final large scale production.

For the most part, it is a technical exposition and has little practical interest to the clinician or laboratory worker.

THEO. J. CURPHEY

Diets for Children

A Study of Individual Children's Diets. By E. M. Widdowson, London, His Majesty's Stationery Office, [c. 1947]. 195 pages, illustrated. Board, 6/-.

In this publication one is impressed with the highly scientific approach to this problem.

Foods eaten by 1128 children were recorded and a wide individual variation in caloric intake was noted in children of the same age and physical stature. The one outstanding fact which has been brought out in this investigation is that similar individuals may differ in their food habits. These departures from the average are comparable with normal physical development. It also indicates that individual requirements differ as much as individual intakes and that an average intake should never be used to assess on individual requirements.

JOHN A. MONFORT

Epidemic Influenza

Studies on the Influenza Epidemic of January-March 1941 at Groningen (Holland). By J.A.R. Van Bruggen, M.D., L. Bijlmer, M.D., M. D. Hoek, *et al.* Leyden, Holland, Stenfert Kroese's Uitg.-Mij N.V., [c. 1947]. 8vo. 79 pages, illustrated. Paper, $2.00. (Verhandelingen van het Instituut voor Praeventieve Geneeskunde. #7)

This short monograph contains a wealth of pertinent information. Our knowledge of the viral etiology of Influenza came to light after the pandemics of 1889 and 1918 and therefore it is uncertain whether these were dominantly of the type A or B. The knowledge gained since 1933 applies to interpandemic Influenza, and this is described in a detailed study of 117 cases.

It predicts, as many do, that a pandemic is not far distant. One important point is emphasized, namely: that many of the complications of this disease are due to pathogenic bacteria, and that therefore the use of sulfa drugs and penicillin is justified both for prophylaxis and cure after the onset of the infection. There is a description of a reliable diagnostic sign that aids in differential diagnosis. All interested in this subject are urged to possess this inexpensive work.

S. R. BLATTEIS

Neurosurgery

Surgical Treatment of the Nervous System. Frederic W. Bancroft, M.D. Supervising Editor. Cobb Pilcher, M.D., Associate Editor. Philadelphia, J. B. Lippincott Co., [c. 1946]. 4to. 534 pages, illustrated. Cloth, $18.00.

This volume consists of seven sections comprising for the most part discussions of the surgical therapeutic methods in the treatment of lesions of the nervous system (somatic and vegetative) that lend themselves to such therapy. Seventeen authors have contributed to this comprehensive discourse on these subjects. Illustrations are clear, appropriately selected and numerous. Accepted surgical techniques employed in the treatment of commonly encountered lesions of the nervous system are stressed. Each author has approached his subject independently, yet very little overlapping is evident. The volume should be of interest not only to neurosurgeons but to general surgeons who often are required to deal with traumatic lesions of the brain, spinal cord and peripheral nerves.

JEFFERSON BROWDER

For the Layman

If You Need an Operation. By Richard A. Leonardo, M.D. New York, Froben Press, [c. 1947]. 8vo. 198 pages. Cloth, $3.00.

The title of this book is misleading. It infers that it is addressed to the layman with advice and directions to him about the course to follow should he need an operation.

In a few sentences of a four page introduction the author states that, because of advanced knowledge of physiology and anaesthesia and improved surgical technique, the present operative mortality is so low that fear should be banished.

However, the remainder of the book presents easily read descriptions of numerous surgical conditions and the techniques used by other surgeons and the author in treating them. Furthermore, critical complications are described.

"A little knowledge is a dangerous thing" and this reviewer fears that the book, however well-intentioned, will arouse far more anxiety than it will allay.

FREDERICK A. PIZZI